UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

Note to Reader

Background: As part of its effort to involve the public in the implementation of the Food Quality Protection Act of 1996 (FQPA), which is designed to ensure that the United States continues to have the safest and most abundant food supply. EPA is undertaking an effort to open public dockets on the organophosphate pesticides. These dockets will make available to all interested parties documents that were developed as part of the U.S. Environmental Protection Agency's process for making reregistration eligibility decisions and tolerance reassessments consistent with FQPA. The dockets include preliminary health assessments and, where available, ecological risk assessments conducted by EPA, rebuttals or corrections to the risk assessments submitted by chemical registrants, and the Agency's response to the registrants' submissions.

The analyses contained in this docket are preliminary in nature and represent the information available to EPA at the time they were prepared. Additional information may have been submitted to EPA which has not yet been incorporated into these analyses, and registrants or others may be developing relevant information. It's common and appropriate that new information and analyses will be used to revise and refine the evaluations contained in these dockets to make them more comprehensive and realistic. The Agency cautions against premature conclusions based on these preliminary assessments and against any use of information contained in these documents out of their full context. Throughout this process, If unacceptable risks are identified, EPA will act to reduce or eliminate the risks.

There is a 60 day comment period in which the public and all interested parties are invited to submit comments on the information in this docket. Comments should directly relate to this organophosphate and to the information and issues available in the information docket. Once the comment period closes, EPA will review all comments and revise the risk assessments, as necessary.

These preliminary risk assessments represent an early stage in the process by which EPA is evaluating the regulatory requirements applicable to existing pesticides. Through this opportunity for notice and comment, the Agency hopes to advance the openness and scientific soundness underpinning its decisions. This process is designed to assure that America continues to enjoy the safest and most abundant food supply. Through implementation of EPA's tolerance reassessment program under the Food Quality Protection Act, the food supply will become even safer. Leading health experts recommend that all people eat a wide variety of foods, including at least five servings of fruits and vegetables a day.

Note: This sheet is provided to help the reader understand how refined and developed the pesticide file is as of the date prepared, what if any changes have occurred recently, and what new information, if any, is expected to be included in the analysis before decisions are made. **It is not meant to be a summary of all current information regarding the chemical.** Rather, the sheet provides some context to better understand the substantive material in the docket (RED chapters, registrant rebuttals, Agency responses to rebuttals, etc.) for this pesticide.

Further, in some cases, differences may be noted between the RED chapters and the Agency's comprehensive reports on the hazard identification information and safety factors for all organophosphates. In these cases, information in the comprehensive reports is the most current and will, barring the submission of more data that the Agency finds useful, be used in the risk assessments.

Jack E. Housenger, Acting Director
Special Review and Reregistration Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES AND
TOXIC SUBSTANCES

June 7, 2000

MEMORANDUM

Subject: **Dichlorvos** (084001). Refined Anticipated Residues and Acute and Chronic Dietary Exposure and Risk Analyses for Residues of Dichlorvos resulting from use of Dichlorvos, Trichlorfon and Naled. DP Barcode D266530.

From: Susan V. Hummel, Chemist/Senior Scientist
David Hrdy, Risk Assessor
Reregistration Branch IV
Mohsen Sahafeyan, Chemist
Chemistry and Exposure Branch I
Health Effects Division, (HED) Mail code 7509C

Through: David Soderberg, Chemist and David Miller, Public Health Officer
Dietary Exposure Science Advisory Council (DE SAC)
Chemistry Science Council (Chem SAC)
HED (7509C)

To: Kimberly Lowe, PM 60
Special Review and Reregistration Division (SRRD) Mail code 7508C

Action Requested

- Calculate anticipated residues (ARs) and perform a probabilistic Tier 3/4 (Monte Carlo) acute and Tier 3 chronic dietary exposure assessments. These exposure analyses are for use in the Re-registration Eligibility Document (RED) for Dichlorvos (also known as DDVP), and are to include residues resulting from the uses of dichlorvos, trichlorfon and naled. This assessment incorporated monitoring data, crop field trial data, and a few tolerance level residues with an estimated percent crop treated (%CT) provided by the Biological and Economic Analysis Division (BEAD) found in attachments 1 and 2. Tolerances for dichlorvos are listed under 40 CFR §180.235, for trichlorfon are listed under 40 CFR §180.198 and for naled are listed under 40 CFR §180.215.

Executive Summary

Acute - Dichlorvos from use of Naled, Trichlorfon and Dichlorvos:

- Tier 3/4 anticipated residues which incorporated percent of crop treated (% CT), monitoring data from the United States Department of Agriculture Pesticide Data Program (USDA PDP) and the Food and Drug Administration (FDA) Surveillance Data and field trial data were used to estimate acute dietary exposure. The acute exposure/risk estimate did not exceed the HED's level of concern for either the general US population or any of the sub-populations. The sub-population with the highest exposure was children 1-6 with 67% of the acute population adjusted dose (aPAD[1]) (0.000334 mg dichlorvos/kg bwt/day) occupied, while the estimated exposure for the U. S. Population was 29% of the aPAD (0.000145 mg dichlorvos/kg bwt/day). The results are provided in table 1.

Table 1. Acute Dietary (Food Only) Tier 3 Exposure and Risk Estimates for Dichlorvos.

Population Subgroup[a]	a P A D , mg/kg	95th Percentile		99th Percentile		99.9th Percentile	
		Exposure, mg/kg	% aPAD[b]	Exposure, mg/kg	% aPAD[b]	Exposure, mg/kg	% aPAD[b]
U.S. pop - all seasons:	0.0005	0.000018	4	0.000044	9	0.000145	29
All infants (<1 year):	0.0005	0.000022	4	0.000087	14	0.000308	62
Children (1-6 years):	0.0005	0.000034	7	0.000076	17	0.000334	67
Children (7-12 years):	0.0005	0.000022	4	0.000050	10	0.000167	33
Females (13-50 years):	0.0005	0.000013	3	0.000032	7	0.000085	17

[a] Population subgroups shown include the U.S. general population, and those of infants, children, and women of child-bearing age.
[b] % aPAD = Exposure (mg/kg) ÷ aPAD (mg/kg) × 100

Chronic - Dichlorvos from use of Naled, Trichlorfon and Dichlorvos:

- Tier 3 anticipated residues (which also incorporated % CT information, monitoring data from the United States Department of Agriculture Pesticide Data Program (USDA PDP) and the Food and Drug Administration (FDA) Surveillance Data), and field trial data were used to estimate chronic dietary exposure. The chronic exposure/risk estimate did not exceed HED's level of concern for either the general US population or any of the sub-populations. The resulting risk estimate for all sub-populations and the general US population was below 100% of the cPAD. The sub-population with the highest exposure was children 1-6 with 2% of the chronic population adjusted dose (cPAD) (0.000004 mg dichlorvos/kg bwt/day), while the estimated risk to the U.S. Population was 1% of the aPAD (0.000002 mg residue/kg bwt/day). Residues of dichlorvos in prunes (dried plums) were the main contributor to dichlorvos exposure to infants and residues in grapes-raisins were the main contributor to dichlorvos exposure to the general US population. In both

[1] A separate PAD for acute and chronic is calculated using the respective RfD.
PAD = Reference Dose (RfD) ÷ Food Quality Protection Act Safety Factor (FQPA SF)

cases these residues resulted from the fumigation treatments associated with DDVP (and not agricultural uses.)

Table 2. Chronic Dietary (Food Only) Tier 3 Exposure and Risk Estimates for Dichlorvos.			
Population Subgroup[1]	cPAD, mg/kg/day[2]	Exposure, mg/kg/day	% cPAD
U.S. Population (total)	0.0002	0.000002	1
All infants (< 1 year)	0.0002	0.000003	2
Children 1-6 yrs	0.0002	0.000004	2
Children 7-12 yrs	0.0002	0.000002	1
Females 13-50 yrs	0.0002	0.000001	1

[1] Population subgroups shown include the U.S. general population, and those of infants, children, and women of child-bearing age, and other, representative populations whose exposure exceeds that of the U.S. general population.
[2] % cPAD = Exposure (mg/kg) ÷ cPAD (mg/kg) × 100

FQPA ASSESSMENT

The FQPA Safety Factor Committee has determined that a 3x FQPA safety factor is required. For details, refer to the FQPA Safety Committee Report dated February 23, 2000.

SUMMARY OF TOXICOLOGY ENDPOINT SELECTION

The doses and toxicological endpoints selected and Margins of Exposures for various exposure scenarios are summarized below.

Table 3. Dietary Endpoint Summary.

EXPOSURE SCENARIO	DOSE (mg/kg/day)	ENDPOINT	STUDY	MOE
Acute Dietary	NOAEL=0.5 UF = 300 FQPA SF=3	Alterations in Functional Observation Battery. Additional 3x for lack of cholinesterase measurement in the critical study.	Acute Neurotoxicity-Rat Study	Not Relevant
	aRfD =0.002 mg/kg/day aPAD =0.0005 mg/kg/day			
Chronic Dietary	NOAEL=0.05 UF= 100 FQPA SF= 3	Plasma and RBC cholinesterase inhibition (ChEI) in both sexes and brain ChEI in males	1 year dog study	Not Relevant
	cRfD = 0.0005 mg/kg/day cPAD = 0.0002 mg/kg/day			
Dietary (Cancer) [a]	Dichlorvos is classified as a Group C Carcinogen.			

Use Information:

Dichlorvos Use:

Tolerances for naled are listed under 40 CFR §180.235. Dichlorvos is registered for use in mushroom houses, direct pour on livestock treatment, livestock premises treatment, and in warehouses storing packaged and bagged raw and processed agricultural commodities. Dichlorvos is not registered for direct use on any field grown commodities. Finite residues of dichlorvos are found in field trials (food handling establishment) for most commodities, but residues are generally non-detectable in FDA and PDP monitoring data and in the FDA total diet study.

Trichlorfon Use:

Tolerances for trichlorfon are listed under 40 CFR §180.235 and include dichlorvos as a metabolite; however since the most recent analysis of trichlorfon exposure (HED's Revised Preliminary Human Health Risk Assessment for Trichlorfon, T. Morton, 4/18/2000) stated "DDVP was not a significant residue in the metabolism study" and the only exposure to trichlorfon is from imported meat then this dietary exposure analysis considered the dichlorvos contribution from trichlorfon to be negligible, and thus assumed no dietary exposure to trichlorfon.

Naled Use:

Tolerances for naled are listed under 40 CFR §180.215. Naled is registered for field use on almonds, beans (succulent & dry), broccoli, Brussels sprouts, cabbage, cauliflower, celery, citrus, collards, cottonseed, eggplant, grapes, hops, kale, melons, peaches, peas (succulent), peppers, pumpkins, safflower, spinach, squash, strawberries, sugar beets, Swiss chard, and walnuts. Cucumbers, lettuce, mushroom, rice, tomato, and turnip tops were previously registered for use; however the Naled RED document recommended for revocation of these tolerances (HED RED Chapter, 10/21/99), they are no longer registered for use, and they, therefore, have not been included in this dichlorvos exposure assessment. Naled is also registered as a treatment for livestock premises; however, this use has been determined to fall under Category 3 of 40 CFR §180.6(a), having no reasonable expectation of finite residues in livestock tissues, and the tolerances have been revoked.

Additionally, naled is registered for a wide area treatment of mosquitos in mosquito abatement districts. A tolerance of 0.5 ppm naled on all raw agricultural commodities (RACs) except those listed in 40 CFR§180.215 has been established for this use.

Use of naled results in residues of naled and its metabolite dichlorvos. Finite residues of naled are found in field trials, but naled residues are generally non-detectable in FDA and PDP monitoring data and in the FDA total diet study. One exception is strawberries; finite residues have been reported for naled in FDA monitoring data and for dichlorvos in FDA and PDP monitoring data. The analytical method for naled converts naled residues to dichlorvos.

BACKGROUND

This review updates the anticipated residues for dichlorvos which were last done in 1998 (S. Hummel, April 9, 1998, D223205; and June 15, 1998, D246897; and S. Schaible, Feb 2, 1994) and it updates the dietary exposure assessments (B. Steinwand, Sept. 27, 1998, D250328) for dichlorvos and for the dichlorvos residues resulting from the use of naled. Anticipated residues for naled were last done in 1994, although the risk assessment has since been updated to include a tolerance residue value and the percent of crop treated. A variety of policies and practices have changed since the previous reviews were completed. Some of these significant updates are detailed below.

- The policy for anticipated residues in acute dietary risk assessments has been revised and updated since the previous acute risk assessment was done for dichlorvos and naled. The previous acute risk assessment used a distribution of a single high end (tolerance equivalent) residues incorporating zeros for the percentage of the crop not treated. Use of distributions from monitoring data is now permitted.

- Some processed commodities and some of the raw commodities, treated with dichlorvos, are considered to be blended commodities (as in HED SOP 99.6). Normally the classification of a commodity as "blended" precludes the use of zeroes in the residue distribution to represent an untreated commodity; however, dichlorvos is used on these raw and processed agricultural commodities after they would have been blended (e.g., sacks of flour on a pallet.) For a Monte Carlo Analysis, it is believed to be most reasonable to use existing monitoring data directly, and incorporate zeroes for the untreated commodity.

- The treatment of non-perishable raw and processed agricultural commodities with dichlorvos occurs in food handling establishments, but tolerances are not established for "all RACs," and a reasonable estimate of %CT is available. This is similar to a post harvest treatment and these uses should be included in the risk assessment. The only other registered food uses for dichlorvos are treatment of mushrooms, livestock premises and direct pour on livestock treatments.

Exposure Assessment Overview

Chronic Exposure Assessments

Point residue values are used when estimating the risk from chronic exposure. In general (as further described in HED Chem SAC Policy entitled "ChemSAC decision re: calculation of anticipated residues", dated 1/25/99) use of a weighted average residue is appropriate for chronic assessments. This is calculated by incorporating information concerning the percent of crop which is treated and assuming that non-detect (ND) residues in treated commodities are present at ½ LOD. Percent of crop treated used in this assessment is presented in attachments 1 and 2.

Acute Exposure Assessment

Distributions of residue values are generally used in acute risk assessments. For all samples analyzed by PDP, the value for half of the limit of detection (LOD) was calculated from the average LOD across all samples with non-detectable residues in all laboratories. Where a sample was treated but not detected in samples analyzed by the FDA Surveillance Monitoring program, the estimates of ½ LOD = 0.001 ppm for dichlorvos in all commodities were used. For commodities which were represented by field trial residue values, treated non-detects were given a value of ½ LOD that was reported in the study. Percent crop treated used in this assessment is presented in attachments 1 and 2.

Cooking and other Processing Factors

Cooking studies for dichlorvos were discussed in S. Hummel memo of 7/18/94 (CB 13006, DP Barcode D197522). Residue decline data for dichlorvos residues were also provided (S. Hummel, 7/18/94, CB 13295, DP Barcode D199763; and S. Hummel, 6/2/94, CB 12658, DP Barcode D195720). Half-lives of dichlorvos in various commodities ranged from none to over 1000 hours. No pattern of decline was noted. The reduction of dichlorvos in cooking appeared to be related to the length of time and the temperature used in cooking. The results of the dichlorvos cooking study are tabulated below. The cooking factors will be translated to other commodities based on similarity of cooking time and temperature. The respective details and crops to which these factors are applied are listed under the specific commodities of interest.

Table 4. Processing factors from cooking (inputs in DEEM Adjustment Factor #1.)

Raw Commodity	Processing Conditions		Dichlorvos Lost (%)	Cooking Factor
	Temperature	Time		
Cocoa Beans [a]	135 C	10 min	99.7%	0.003
Dry Pinto Beans [b]	>95 C	90 min	99.1%	0.009
Tomato Juice [c]	80 C	40 min	90 %	0.10
Ground Roasted Coffee Beans [d]	100 C	8 min	71 %	0.29
Raw Hamburger Meat [e]	>100 C*	6 min	70 %	0.30
Raw Eggs	>100 C*	3 min	38 %	0.62
Raw Whole Milk (pasteurization)	62.8 C	30 min	7 %	0.93

[a] The cocoa bean cooking factor was translated to coconuts and to peanuts, hulled, baked.
[b] The dry pinto beans cooking factor was applied to all dried beans and peas and to peanuts, hulled, boiled.
[c] The tomato juice cooking factor was translated to the cooking factor for celery juice.
[e] The hamburger meat cooking factor was translated to all food forms of meats.

* this is the griddle temperature, not the actual cooking temperature of the tissue.

RESIDUE INFORMATION

The USDA PDP program is generally considered to be the preferred source for monitoring data because sampling is conducted according to a statistical protocol, samples are collected at the wholesale level, and commodities are prepared according to typical consumer practices prior to analysis (i.e., washing, peeling, etc.). In this exposure assessment, USDA PDP monitoring results from 1994 - 1998 were used when available. For all samples analyzed by PDP, the value for half of the limit of detection (LOD) was calculated from the average LOD across all samples with non-detectable residues in all laboratories.

When FDA Surveillance Monitoring Program results were used, data were from the years 1992 - 1997. Because, for a given commodity, FDA data may be limited for any given year, results are generally combined from all years. For all samples analyzed by the FDA Surveillance Monitoring program, the ½ LOD and ½ the limit of quantitation (LOQ) are taken from the memorandum by S. Hummel, 2/26/99, "LOQs for FDA Monitoring Data". That memo provides an estimate of ½ LOD = 0.0015 ppm and ½ LOQ = 0.005 ppm for dichlorvos in all commodities.

FDA Total Diet Study (TDS) data are also available for dichlorvos. The TDS analyzes foods purchased at supermarkets and prepared (washed and/or cooked) according to standard consumer practices. The TDS analyzes approximately 264 foods. FDA personnel purchase foods from supermarkets or grocery stores four times per year, one from each of four geographic regions of the country. Each collection, referred to as a Market Basket (MB), is a composite of like foods purchased in three cities in a given region. The foods are prepared for consumption, i.e., as they will be eaten, and then analyzed. Before analysis, the three individual portions are combined.

Not per Agency practice, HED did use TDS results quantitatively in this dietary exposure assessment, as well as used them qualitatively to support or interpret other monitoring data. From 1991 to 1997 a total of 18 Market Basket surveys has been conducted.

This assessment reflects four different treatment categories, fumigation of bulk stored commodities as in a warehouse DDVP only, fumigation of packaged and bagged non-perishable dry commodities (DDVP only), treatment of mushroom houses (DDVP only), or agricultural use (of naled use only.) Each of these treatment categories is described in further detail below.

Some commodities could be treated as either bulk stored commodities or as packaged and bagged commodities. Treatment as packaged and bagged commodities would occur closer to the consumer than treatment as bulk stored commodities. A description of each treatment type is discussed below for each commodity.

Warehouse and Bulk Commodity Uses of Dichlorvos

Peanuts:

The registrant has provided a field study where peanuts were fumigated in bulk with DDVP. The fumigation occurred in a warehouse with peanuts placed in a pile (S. Hummel, 6/2/94). Following daily fumigation samples were taken from the surface and at distances of 6, 12, 18, and 36 inches from the surface of the pile of peanuts. The following measurements (DDVP concentration in ppm) were made.

Table 5. Peanut Data (whole peanuts) from Bulk Storage.

Surface	Distance from top of bin (inches)				
	6	12	18	36	# of month
0.46, 0.19	1.03, 0.13	0.02, 0.01	0.01, 0.01		2 months
1.64, 2.27	0.03, 0.03	<0.01, <0.01	<0.01, <0.01	<0.01, <0.01	4 months
14.5, 3.5	0.04, 1.41	0.01, 0.44	<0.01, 0.03	<0.01, <0.01	6 months
2.62, 5.36	3.47, 1.74	0.24, 0.41	0.20, 0.19	<0.01, <0.01	8 months
1.19, 0.92	0.78, 0.88	0.05, 0.07	0.02, 0.02	<0.01, <0.01	

These data were provided by storage interval. However, there was very little difference in the residues as a function of time stored, and no differentiation will be made. These data need to be corrected for shelling and for roasting (which is done to peanuts being processed into peanut butter, too). The shelling factor is 0.05 x. The processing factor is 0.003x, translated from cocoa beans, which are processed at 135 C for 9 minutes, while peanuts are roasted at 160 C for 40 to 60 minutes.

> Peanuts roasted in the shell are roasted in ovens at 300 - 400 degrees F until the peanuts achieve a temperature of 150 - 170 degrees F. If cooked above 170 degrees F they develop an off flavor. Shelled peanuts, as for peanut butter, may be roasted in ovens as high as 800 degrees F, until they reach temperatures as high as 320 degrees F. (*Peanut, Production, Processing and Products*)

We note that the peanut fumigation trials conducted by the registrant involved daily treatment of the peanut pile for nine months, that residues were generally found in the top one and half feet of the pile, that residue measurements were made on whole peanuts and that subsequent roasting of the peanuts are expected to result in massive degradation of dichlorvos. Standard time and temperature roasting conditions are detailed above. Too, OPP believes that residues from actual application of dichlorvos on shelled peanuts are negligible for peanut butter. Furthermore, PDP is currently sampling peanut butter for dichlorvos as part of its program. These data are expected to confirm our assumption of negligible residues. Therefore, peanut butter was not given a residue value in this dichlorvos dietary exposure assessment.

Packaged and Bagged Commodities

For all packaged and bagged commodities, pallets were stacked in a warehouse in cubes of 4 pallets x 4 pallets x 4 pallets. This stacking of pallets in a cubic configuration is typical in food handling warehouses. The field trials measured residues in the top layer, sides and inner layer of the pallet following treatment at 2 grams ai/1000 ft^3 (a maximum labeled use rate). Each pallet is 4' x 4' x 4'. In estimating the residue in the stacked pallets, we assume that the residues from the top layer correspond to the outside 1' layer of the 4 pallet x 4 pallet x 4 pallet stack (i.e., 0.2 fraction of the volume), and "inside" residues apply to the other 15' (i.e., 0.8 fraction). For the commodities described below there are 12 residue measurements for the top and sides of the pallet and 2 residue measurements for the inside of the pallet. To adjust for over-sampling of "outside" residues and retain volumetric proportions, the 2 inside measurements will be repeated 24 times for a total of 60 numbers representing treated samples[2]. BEAD has estimated that 12% of packaged and bagged commodities in warehouses are treated (memo dated 4/27/98, J. Faulkner). To adjust for 12% crop treated, a total of 500 numbers is needed, so each RDF file consisted of 60 residues and 440 zeroes.

Flour (ddvpflou.rdf). Flour will be translated to dried fruits and most other packaged and bagged commodities without monitoring data (e.g., spices and herbs). OPP believes this is a reasonable translation due to similarities in starch content and/or moisture content . A residue estimate for chronic analysis was calculated as 0.007 ppm as previously described. The sample file is shown below.

```
Flour (Translated to dried fruits)
TotalNZ=60
Totalz=440
totallod=48
lodres=0.010
0.07
0.04
0.21
```

[2]This is calculated as follows: the 12 top/side samples must represent about 20 percent of the total. Since 12 is 20 % of 60, a total of 48 inside measurements (or 60 minus 12) must be used to represent the remaining 80%. Since there are only two inside measurements, each of the two inside measurements must be repeated 24 times for a total of 48 inside measurements. The 48 inside "measurements" added to the 12 outside measurements yields a total of 60 measurements in the appropriate proportions.

0.62
0.57
0.32
0.46
0.16
0.14
0.12
0.16
0.13

Grains and Grain Products (ddvpgrai.rdf). Sufficient monitoring data are available for grain commodities in the FDA Total Diet Study. There are acceptable field trial data from grain commodity application were not used. The FDA Total Diet Study is recognized as not an ideal data set source for acute assessments but is believed to be adequate for this situation. FDA Total Diet Study (TDS) data for 1982 through 1996 were used for cereal grains flours and meals (in DEEM these commodities are barley, buckwheat, corn millet oats, rice, rye, sorghum and wheat.) During this time period, a total of 43 market baskets was collected. There were 126 commodities which dichlorvos would be detected in those 43 samples. Only one sample had a detectable residue; one sample of rye bread at 0.01 ppm (which is below the LOQ of 0.03 ppm.) There were approximately 35 non-fatty commodities analyzed. These non-fatty commodities are similar to crackers and cereals. Approximately 11 baked goods were made from flour, sugar, and dried eggs. One detectable residue of Dichlorvos at 0.01 ppm (LOD = 0.001) was found in 43 market baskets of the 35 different grain-based commodities, for a total of 1505 samples. If 12% of the crop was treated, then 181 out of 1505 samples were treated. A chronic residue value of 0.00007 ppm was calculated, as described earlier and was used for chronic assessment (see also: HED Chem SAC Policy entitled "ChemSAC decision re: calculation of anticipated residues", dated 1/25/99.)

Cereal Grains Flours and meals
TotalNZ=181
Totalz=1324
totallod=180
lodres=0.001
0.01

Cocoa beans and coconuts (ddvpcoco.rdf). Only field trial data are available for cocoa beans as a packaged and bagged commodity. Non-detectable residues were reported in all samples (inner and outer pallets.) The .rdf file for cocoa beans is also translated to coconuts. A processing factor is available and was applied (0.003x) for cocoa beans and was translated to dried coconuts. A chronic residue value of 0.0006 ppm was calculated.
For cocoa beans and coconuts:
TotalNZ=0
Totalz=440
totallod=60
lodres=0.005

Coffee (ddvpcoff.rdf). Insufficient monitoring data are available from the FDA Total Diet Study and only field trial data are available for coffee beans as a packaged and bagged commodity. A total of 12 detectable residues was reported in the outer layer, in the 4x4x4 pallet configuration referenced above, and one detectable residue was reported in the inner layer. A chronic residue value of 0.003 ppm was calculated as described earlier.
Coffee
Totalz=440

totallod=29
lodres=0.005
0.06
0.09
0.41
0.02
0.68
0.14
0.16
0.16
0.21
0.18
0.11
0.06
19,0.03

Dry Beans (ddvpdbea.rdf). Field trial data are available for dry beans as a packaged and bagged commodity. A total of 11 detectable residues were reported in the outer layer. A cooking factor was used (0.009x). A chronic residue value of 0.0006 ppm was calculated as previously discussed.

TotalNZ=11
Totalz=440
totallod=49
lodres=0.005
0.02
0.05
0.05
0.04
0.03
0.06
0.06
0.07
0.16
0.08
0.16

Peanuts (ddvpbea.rdf). Field trial data are available for dry beans as a packaged and bagged commodity. Detectable residues were reported (ranging from 0.02 to 0.16 ppm.) The dried beans .rdf file was used for peanuts because physical size and attributes between peanuts and dried beans are similar. A cooking factor of 0.003 was translated from cocoa beans for peanuts, hulled, baked and a cooking factor of 0.009 for peanuts hulled boiled was translated from dry pinto beans boiled. A chronic residue value of 0.0006 ppm was calculated as previously discussed.

TotalNZ=11
Totalz=440
totallod=49
lodres=0.005
0.02
0.05
0.05
0.04
0.03
0.06
0.06

0.07
0.16
0.08
0.16

Nuts (ddvpnuts.rdf). Field trial data are available for nuts (walnuts) as a packaged and bagged commodity. This .rdf file was used for all the commodities in the tree nut crop group. No detectable residues were reported. A chronic residue value of 0.0006 ppm was calculated as previously described.

Dichlorvos on Tree Nuts
Totalz=440
totallod=60
lodres=0.010

Soybeans (ddvpsoy.rdf). Field trial data are available for soybeans as a packaged and bagged commodity. The .rdf file for flour was applied to soybean flour. The .rdf file for walnut oil was applied to soybean oil. A chronic residue value of 0.0009 ppm was calculated.

Totalz=440
totallod=29
lodres=0.010
19,0.02
3,0.01
0.03
0.61
0.05
0.12
2,0.04
0.16
2,0.10

Mushroom house use

Mushrooms (ddvpmush.rdf). Field trial data are available for mushrooms treated in a mushroom house. A chronic residue value of 0.0006 was calculated.

Mushrooms
TotalNZ=6
0.01
0.12
0.08
0.05
2, 0.02

Dichlorvos residues in Meat, Milk, Poultry, & Eggs

Monitoring data from PDP are available for milk. One detectable residue was reported at 0.003 ppm out of 1881 samples, with an LOD of 0.001 - 0.002 ppm (avg. 0.0014 ppm). These data can be used with the ratios between the residues in tissues and milk from the goat dermal metabolism study, and residues in milk from the USDA PDP to calculate residues in the meat. A dermal field trial study is not available. An oral metabolism study was not used since residues resulting from

dichlorvos ingestion by ruminants has been determined to fall under Category 3 of 40 CFR §180.6(a), having no reasonable expectation of finite residues in livestock tissues, and the tolerances have been revoked.

Tissue	Adjustment factor calculation		Factor to be used
Cattle, fat	x 0.05 (ratio) x	0.3 (cooking)/0.93[3]	= 0.02 x
Cattle, liver	x 5.0 (ratio) x	0.3 (cooking)/0.93	= 1.6x
Cattle, kidney	x 1.8 (ratio) x	0.3 (cooking)/0.93	= 0.5x
Cattle, muscle	x 0.3 (ratio) x	0.3 (cooking)/0.93	= 0.09x

Milk (10%CT)
Milk
totalz=1873
totallod=18
lodres=.0068
0.003
A chronic residue value of 0.000007 ppm was calculated.

Beef tissues (10%CT; use conversion factor from milk)
TotalNZ=1
Totalz=90
totallod=9
lodres=0.001
0.003
A chronic residue value of 0.0001 ppm was calculated.

Eggs (5%CT) Based on Dermal study - use cooking factor
TotalNZ=0
Totalz=95
totallod=5
lodres=0.05
A chronic residue value of 0.002 ppm was calculated.

Poultry (3%CT) Based on Dermal study - use cooking factor
TotalNZ=0
Totalz=97
totallod=3
lodres=0.05
A chronic residue value of 0.001 ppm was calculated.

[3]Used to "back adjust" these PDP pasteurized milk concentrations to a raw whole milk value necessary for use here.

Dichlorvos Residues from the Use of Naled.

Naled metabolizes / degrades to dichlorvos (DDVP); therefore human food commodities and animal feed items treated with naled will result in DDVP residues. For this reason, those field trial data or tolerances that are expressed in naled equivalents were converted to dichlorvos equivalents, by multiplying by 0.58 (the ratio of dichlorvos to naled molecular weights). The monitoring data from USDA-PDP and FDA were already reported in dichlorvos equivalents.

Almonds - No monitoring data were available from FDA or USDA-PDP. Non-detectable residues (<0.02 ppm for naled and <0.01 ppm for dichlorvos) were reported in two residue trials conducted in CA. An estimated maximum of 2% CT (according to the 1998 BEAD estimate). Since almonds can also be treated as a packaged and bagged commodity which is expected to result in more frequent and greater exposure due to the higher percent crop treated, the .rdf file for nuts as a packaged and bagged commodity was used instead.

Green Beans (v2-NalDGB-can.rdf , v2-NalDGB-frozen.rdf & v2-NalGB.rdf)- Monitoring data were available from USDA-PDP (from 1994 to 1998: total number of data for canned = 855, number of detected residues for canned= 0, LOD range for canned = 0.002 - 0.007 ppm, weighted average ½ LOD for canned = 0.0015 ppm; total number of data for frozen = 1922, number of detected residues for frozen= 1 at 0.012 ppm, LOD range for frozen = 0.001 - 0.017 ppm, weighted average ½ LOD for frozen = 0.002 ppm, total number of data for fresh (1995)= 587, number of detected residues for fresh = 0, LOD = 0.004 ppm). An estimated maximum 1% CT for green beans (according to the 1998 BEAD estimates) was used in this assessment. The PDP data for frozen green beans were used to construct an RDF for all food forms of green beans except canned beans - all are considered to be partially-blended. This RDF contained one detectable residue at 0.012 ppm, 18 repeated ½ LOD values at 0.002 ppm and 1903 zeros. The PDP data for canned green beans were used to construct an RDF for only canned food form of green beans; the RDF contained one ½ LOD value at 0.00015 ppm and 99 zeros. A chronic residue value of 0.00002 ppm for frozen green beans, 0.000009 ppm for fresh green beans and 0.000009 ppm for canned green beans were calculated.

Green Peas (v2-NalDgreenPeas.rdf) - Monitoring data on green peas were not available from USDA-PDP. However, FDA analyzed 430 samples of green peas between 1992 to 1998 with no detected residues found (½ LOD = 0.0015 ppm). An estimated maximum 1%CT (according to the 1998 BEAD estimates) for green peas were used in this assessment. The RDF contained one ½ LOD at 0.0015 ppm and 99 zeros for green peas. A chronic residue value of 0.000015 ppm was calculated.

Melons (v2-NalDMel.rdf)- Monitoring data on cantaloupe were available from USDA-PDP (sampled only in 1998, total number of data = 408, number of detected residues = 0, LOD range = 0.002 - 0.007 ppm, weighted average ½ LOD = 0.0016). Melons are considered a non-blended commodity and the composite data from PDP are usually decomposited for this category of crops; however, since no detected residues were found in PDP data, decompositing was not performed and these data were used directly in an RDF. An estimated maximum 1% CT (according to the 1998 BEAD estimates) was also used in this assessment. The RDF for melons contained one ½

LOD value at 0.0016 ppm, and 99 zeroes. This RDF was used for both non-blended and partially-blended food forms of melons. A chronic residue value of 0.000009 ppm was calculated.

Broccoli (v2-NalDBroc.rdf)- Monitoring data were available from USDA-PDP (sampled only fresh broccoli and only in 1994, total number of data = 630, number of detected residues = 0, LOD range = 0.002 - 0.014 ppm, weighted average ½ LOD = 0.0025 ppm). Since no residues were detected in PDP data, decomposition was not performed for non-blended food forms of broccoli (fresh) and those data were used directly in an RDF. An estimated maximum 10% CT (according to the 1998 BEAD estimates) was also used in this assessment. The RDF for broccoli contained 10 repeated ½ LOD values at 0.0025 ppm, and 90 zeroes. This RDF was used for both non-blended and partially-blended food forms of a broccoli. A chronic residue value of 0.0001 ppm was calculated as previously described.

Cauliflower (v2-NalDCaul.rdf)- Monitoring data were not available from USDA-PDP; however, FDA analyzed 204 samples of cauliflowers between 1992 to 1997 with no detected residues found (LOD = 0.003 ppm). An estimated maximum 26% CT for cauliflower (according to the 1998 BEAD estimates) was also used in this assessment. Since no residues were detected in FDA data, decompositing was not performed for non-blended food forms of cauliflower (fresh) and those data were used directly in an RDF. The RDF for cauliflower contained 26 repeated ½ LOD values at 0.0015 ppm, and 74 zeroes. This RDF was used for both non-blended and partially-blended food forms of cauliflower. A chronic residue value of 0.00015 ppm was calculated.

Brussels Sprouts (v2-NalDBrsS.rdf)- Monitoring data were not available from USDA-PDP. The monitoring data from FDA only contains 13 residue measurements (no detectable residues). These data could not be used since the Agency requires at least 100 data points; however, the broccoli PDP data could be surrogated for Brussels sprouts if the use patterns were the same (this is not in strict accordance with HED SOP 99.3 however, this is considered a reasonable approximation since DDVP is not registered on lettuce which is the appropriate surrogate commodity for Brussels sprouts.) Thus, the broccoli data (630 samples with 0 detects) were translated to Brussels sprouts. An estimated maximum 83% CT for brussels sprouts (according to the 1998 BEAD estimate) was also used in this assessment. The RDF for Brussels sprouts contained 83 repeated ½ LOD values at 0.0014 ppm, and 17 zeroes. This RDF was used for all the food forms of Brussels sprouts. A chronic residue value of 0.001 ppm was calculated.

Swiss Chard- No PDP monitoring data was available for Swiss chard, and FDA had collected only 16 samples. Therefore, PDP data on spinach was translated to Swiss chard. The spinach data consisted of 1638 samples, with no detects and an average ½ LOD of 0.0037 ppm. Since no information on percent crop treated was available, the assessment assumed that the percent of Swiss chard which has been treated is 100%. Thus, a point estimate at the 1/2 LOD of 0.0037 was used for Swiss chard.

Collards and Kale- No PDP monitoring data was available for collards and kale, but FDA had collected 143 collard samples and 108 kale samples between 1992 - 1998. No residues were detected in either data set with an LOD of 0.003 ppm. BEAD has estimated that collards are 7% crop treated and provided no estimate for kale. Therefore, an RDF for collards was created with

7 samples at the 1/2LOD of 0.0015 ppm, and 93 zeros. Because kale was assumed to be 100% crop treated, it was satisfactory to use a point estimate at the 1/2LOD of 0.0015 ppm.

Celery (v2-NalDCelery.rdf). Monitoring data were available from USDA-PDP (sampled only fresh celery and only in 1994, total number of data = 176, number of detected residues = 0, LOD range = 0.002 - 0.014 ppm, weighted average ½ LOD = 0.0026 ppm). Since no detected residues were found in PDP data, decompositing was not performed for non-blended food forms of celery (fresh) and those data were used directly in an RDF. An estimated maximum 18% CT (according to the 1998 BEAD estimates) was also used in this assessment. The RDF for celery contained 18 repeated ½ LOD values at 0.0026 ppm, and 82 zeroes. This RDF was used for both non-blended and partially-blended food forms of celery. A chronic residue value of 0.0003 ppm was calculated as previously described.

Cottonseed. No monitoring data were available from USDA-PDP or FDA. Insufficient field trial data were available (no data were submitted for D formulation. No processing data for oil were submitted). A tolerance equivalent residue converted to dichlorvos equivalent (0.5 ppm X 0.58 = 0.29 ppm) was used. An estimated maximum 1% crop treated (according to the 1998 BEADS estimate) was also used in this assessment. Processing factors of 0.007 and 0.02 (Hummel, Sue, DP Barcode D199979, MRID 42993501, July 18, 1994) were used for cottonseed meal and oil respectively. Since cottonseed meal and cottonseed oil are considered to be blended commodities, point estimates were used (cottonseed meal: 0.29 X 1% X 0.007= 0.00002 ppm ; cottonseed oil: 0.29 X 1% X 0.02 = 0.00006 ppm). A chronic residue value of 0.003 ppm was calculated.

Grapes (v2-NalDGrape.rdf). Monitoring data were available from USDA-PDP. (sampled fresh grapes in 1994 to 1996, total number of data = 1884, number of detected residues = 1 at 0.003 ppm, LOD range = 0.001 - 0.014 ppm, weighted average ½ LOD = 0.0018 ppm). An estimated maximum 5% CT (according to the 1998 BEAD estimates) was also used in this assessment. The RDF for grapes contained one detectable residue at 0.003 ppm, 93 repeated ½ LOD values at 0.0018 ppm, and 1790 zeroes. This RDF was used for all food forms of grapes, except grapes-raisins which used the flour.rdf file as previously mentioned, which are considered to be partially-blended commodities. A chronic residue value of 0.00005 ppm was calculated.

Grapes-Juice (v2-NalDGrapJ-RE.rdf & v2-NalDGrap-CO.rdf) - Monitoring data were available from USDA-PDP. (sampled both ready-to-serve [RE]and concentrated [CO] grape juice in 1998, total number of data for RE= 345, number of detected residues for RE = 0, LOD range for RE = 0.002 - 0.007 ppm, weighted average ½ LOD for RE= 0.0016 ppm; total number of data for CO= 320, number of detected residues for CO = 0, LOD range for CO = 0.002 - 0.007 ppm, weighted average ½ LOD for CO= 0.0017 ppm). An estimated maximum 5% CT (according to the 1998 BEAD estimates) was also used in this assessment. Both RE and CO grape juice are considered to be partially-blended commodities. The RDF for RE grapes contained 5 repeated ½ LOD values at 0.0016 ppm, and 95 zeroes. The RDF for CO grapes contained 5 repeated ½ LOD values at 0.0017 ppm, and 95 zeroes. A chronic residue value of 0.00005 ppm was calculated for

both ready to serve and concentrated grape juices. The juice processing factor to concentrate processing factor ratio was retained.[4]

Dried Hops (v2-NalDhops.rdf) - No monitoring data were available from USDA-PDP or FDA. Field trial data were collected after one application at 1 lb ai/A (maximum number of applications is not stated on the label) and at PHI of 1 and 4 days (vs 4 days on the label). The 6 data points (sum of dichlorovos and naled) were expressed as naled equivalents and were 0.04, 0.05, 0.09, 0.09,0.09, and 0.09 ppm. Since no information on the percent of the crop treated was available for hops, it was assumed that 100% of the crop was treated. Consequently, the RDF contained all the field trial data in dichlorvos equivalents (0.023, 0.029, 0.052, 0.052, 0.052, 0.052 ppm) without any LOD or zeroes. A chronic residue value of 0.04 ppm was calculated.

Cabbage (v2-NalDCabb.rdf)- Monitoring data were not available from USDA-PDP. Monitoring data from FDA were available (1992-1998: total number of data = 473, number of detects = 0, LOD = 0.01 ppm). An estimated maximum 11% CT for cabbage (according to the 1998 BEAD estimates) was also used in this assessment. Since no detected residues were found in FDA data decompositing was not performed for non-blended food forms of cabbage and those data were used directly in an RDF. The RDF for cabbage contained 11 repeated ½ LOD values at 0.005 ppm, and 89 zeroes. This RDF was used for both non-blended and partially-blended food forms of cabbage. A chronic residue value of 0.0006 ppm was calculated.

Oranges (v2-NalDOran.rdf). Monitoring data were available from USDA-PDP (sampled oranges in 1994 to 1996, total number of data = 1892, number of detected residues = 0, LOD range = 0.002 - 0.02 ppm, weighted average ½ LOD = 0.003 ppm). Since no detected residues were found in PDP data, decompositing was not performed for non-blended food forms of oranges (fresh) and those data were used directly in an RDF. An estimated maximum 2% CT for oranges (according to the 1998 BEAD estimates) was also used in this assessment. The RDF for oranges contained 2 repeated ½ LOD values at 0.003 ppm, and 98 zeroes. This RDF was also used for partially-blended food forms of oranges. A chronic residue value of 0.00003 ppm was calculated.

Grapefruit (v2-NalDGrf.rdf), Lemon (v2-NalDLemon.rdf) and Tangerine (v2-NalDTangerine.rdf) - Monitoring data were not available from USDA-PDP for these commodities. Although FDA data were available for grapefruit (total number of data = 117, total number of detects = 0, LOD = 0.01 ppm), they were insufficient for lemons (only 36 data points) and tangerines (total data points = 15). The Agency generally requires 100 data points at minimum for use in dietary risk assessment. However, orange data could be surrogated for lemons and tangerines (according to the HED SOP 99.3) since the use patterns were the same. As with oranges, no decompositing was deemed necessary for these commodities. BEAD estimated a maximum 1% CT for grapefruit and lemon, and 3% CT value for tangerines was also used in this assessment. The RDF for grapefruit contained one ½ LOD value at 0.005 ppm (½ LOD from FDA data) and 99 zeroes. The RDF for lemons contained one ½ LOD value at 0.003 ppm and 99 zeroes. The RDF for

[4] Grape juice was assigned a processing factor of 1x while grape juice concentrate was assigned a 3x from the calculation of 3.6 default processing value for grape juice concentrate divided by the 1.2 default for grape juice.

tangerine contained 3 repeated ½ LOD values at 0.003 ppm and 97 zeroes. These RDFs were applied to both non-blended and partially-blended food forms of grapefruit, lemon, and tangerine. A chronic residue value of 0.00005 ppm was calculated for all citrus commodities excluding orange commodities.

Orange-Juice and Orange-Juice Concentrate (v2-NalDOranJuice-RE.rdf & v2-NalDOranJuice-CO.rdf) ; Grapefruit-Juice and Grapefruit-Juice Concentrate (v2-NalDGrfJ-RE.rdf & v2-NalDGrfJ-CO.rdf) ; Lemon-Juice and Lemon-Juice Concentrate (v2-NalDLemJ-RE.rdf & v2-NalDLemJ-CO.rdf) ; Tangerine-Juice and Tangerine-Juice Concentrate (v2-NalDTangJ-RE.rdf & v2-NalDTangJ-CO.rdf) - Monitoring data were available from USDA-PDP (sampled both ready-to-serve [RE] and concentrated [CO] orange juice in 1997 and 1998, total number of data for RE = 923 , number of detected residues for RE = 0, LOD range for RE = 0.002 - 0.017 ppm, weighted average ½ LOD for RE= 0.0036 ppm; total number of data for CO= 469, number of detected residues for CO = 0, LOD range for CO = 0.002 - 0.017 ppm, weighted average ½ LOD for CO= 0.0032 ppm). An estimated maximum 2% CT for oranges (according to the 1998 BEAD estimates) was also used in this assessment. Both RE and CO orange juice are considered to be partially-blended commodities. The RDF for RE orange juice contained 2 repeated ½ LOD values at 0.0036 ppm, and 98 zeros. The RDF for CO orange juice contained 2 repeated ½ LOD values at 0.0032 ppm, and 98 zeros. These data were translated to juice and juice concentrates of grapefruit, lemon, and tangerine with number of ½ LOD values in their RDFs adjusted according to their %CT (one, one, and three repeated ½ LOD values for the juice and juice concentrate of grapefruit, lemon, and tangerine respectively). The following table contains the modified processing factors that were used due to the use of direct data from juice and juice concentrate (instead of using data from the whole fruit). A chronic residue value of 0.00004 ppm was calculated.

Table 6. Processing Factor for Citrus Juices

commodity	DEEM Default PF	Modified PF [a]
orange Juice	1.8	1.00
orange Juice-conc	6.7	3.72
Lime Juice	2	1.11
Lime Juice Concentrate	6	3.33
Lemon Juice	2	1.11
Lemon Juice-conc	11.4	[b] 6.33
Grapefruit juice	2.1	1.17
Grapefruit juice-conc	8.26	4.58
Tangerine Juice	2.3	1.28
Tangerine Juice-conc	7.35	4.08

[a] Note: Since PDP reconstitutes their juice concentrate samples before analysis, a concentration factor must be applied since DEEM assesses consumption of concentrate. The modified PF shown in the third column of the table and adjusts for the PDP orange juice (and reconstituted orange juice measurements are being translated to all the citrus juices and their concentrates.

[b] Sample Calculation: Lemon Juice DEEM PF/ OJ DEEM PF * Lemon Juice concentrate DEEM PF/Lemon Juice DEEM PF = Modified PF for Lemon Juice Concentrate: (2/1.8) * (11.4/2) = 6.33x

Peaches (v2-NalDPch.rdf). Monitoring data were available from USDA-PDP (sampled canned peaches in 1998 and fresh in 1994-1996, total number of data for canned peaches= 756, number of detected residues for canned = 0, LOD range for canned = 0.002 - 0.015 ppm, weighted

average ½ LOD for canned= 0.0033 ppm; total number of data for fresh= 1087, number of detected residues for fresh = 0, LOD range for fresh = 0.001 - 0.014 ppm, weighted average ½ LOD for fresh= 0.0033 ppm). Since no detected residues were found in PDP data which were well over 100 (minimum required data by the Agency), decomposition was not performed for non-blended food forms of peaches (fresh) and those data were used directly in an RDF. An estimated maximum 1% CT for peaches (according to the 1998 BEAD estimates) was also used in this assessment. The RDF for both fresh and canned peaches contained one ½ LOD value at 0.0033 ppm, and 99 zeroes. This RDF was applied to both non-blended and partially-blended food forms of peaches. A chronic residue value of 0.00002 ppm was calculated.

Spinach (v2-NalDSpin.rdf). Monitoring data were available from USDA-PDP (canned spinach was sampled in 1997 and 1998, fresh spinach was sampled from 1995 to 1997, total number of data for canned spinach = 863, total number of data for fresh spinach = 1638, number of detected residues for canned spinach= 0, number of detected residues for fresh spinach= 0, LOD range = 0.002 - 0.017 ppm, weighted average ½ LOD for canned spinach= 0.0037 ppm, weighted average ½ LOD for fresh spinach= 0.0037 ppm). An estimated maximum 1% CT for spinach (according to the 1998 BEAD estimates) was also used in this assessment. The RDF for both fresh and canned spinach contained one ½ LOD value at 0.0037 ppm, and 99 zeroes. A chronic residue value of 0.00002 ppm was calculated.

Squash (v2-NalDSqua-fz.rdf & v2-NalDSqua-fr.rdf). Monitoring data were available from USDA-PDP (fresh and frozen winter squash were sampled in 1997 and 1998, total number of data for fresh = 970, total number of data for frozen= 370, number of detected residues for fresh= 0, number of detected residues for frozen= 0, LOD range for fresh = 0.002 - 0.017 ppm, LOD range for frozen= 0.002 - 0.017 ppm, weighted average ½ LOD for fresh= 0.0015 ppm, weighted average ½ LOD for frozen= 0.0019 ppm). Since no detected residues were found in PDP data decomposition was not performed for non-blended food forms of squash and those data were used directly in an RDF. An estimated maximum 1% CT for squash (according to the 1998 BEAD estimates) was also used in this assessment. The RDF for frozen squash contained one ½ LOD value at 0.0019 ppm, and 99 zeroes. The RDF for fresh squash contained one ½ LOD value at 0.0015 ppm, and 99 zeroes. These RDF's were used for summer and winter squash. A chronic residue value of 0.00009 ppm for frozen squash and 0.00001 ppm for fresh squash were calculated.

Eggplants (v2-NalDEggpl.rdf) - Monitoring data were not available from USDA-PDP or FDA. The pepper field trial data could be surrogated for eggplants if the use pattern were the same (according to the HED SOP 99.3). Since the use pattern was not similar (pepper: 1.0 lb ai/A for EC and 0.9 lb ai/A for D formulation with PHI of 1 day; eggplants: 1.35 lb ai/A for EC and 2.0 lb ai/A for D formulation with PHI of 1 day), the pepper data could not be translated to eggplants. Consequently, the tolerance equivalent residue in dichlorvos equivalent (0.5 ppm X 0.58 = 0.29 ppm) was used. Since the estimated maximum %CT for eggplants was 1%, the RDF contained one tolerance equivalent residue at 0.29 ppm and 99 zeroes. No decompositing was necessary since the tolerance equivalent residue value (high end) was used. A chronic residue value of 0.003 ppm was calculated.

Pepper (v2-NalDPepp.rdf) - Monitoring data were not available from USDA-PDP. However, FDA data for sweet pepper and hot pepper from 1992 to 1998 were available (total number of data for sweet pepper = 339, number of detects = 0, total number of data for hot pepper = 63, number of detects = 0, LOD = 0.01 ppm). An estimated maximum %CT of less than 1% was reported by BEAD (1998); however, the minimum 1%CT was used in this assessment. Since no detected residues were found in FDA data decomposition was not performed for non-blended food forms of pepper and those data were used directly in an RDF. The RDF was made of one ½ LOD value of 0.005 ppm and 99 zeros for both non-blended and partially-blended food forms of pepper. This RDF was applied also to hot and chili peppers. A chronic residue value of 0.005 ppm was calculated.

Pumpkins (v2-NalDCucum.rdf) - Monitoring data were not available from USDA-PDP. Monitoring data from FDA were insufficient (1992-1998: total number of data= 29, number of detects = 0); the Agency generally requires at least a 100 data from monitoring program to be used in the dietary risk assessment. No field trial data were available for pumpkins; however, the cucumber data could be surrogated for pumpkins since the use pattern was the same (according to the HED SOP 99.3). As the squash rdf file was used for cucumber, those data were also translated to pumpkins, using estimated maximum 1% CT as well (according to the 1998 BEAD estimate). Therefore, the RDF for cucumber was also used for the pumpkins. A chronic residue value of 0.00001 ppm was calculated.

Strawberries (v2-NaldStrawb.rdf) - Monitoring data were available from USDA-PDP. Fresh and frozen strawberries were sampled in 1998; however, since the total number of data for frozen strawberries were only 47, these data could not be used separately for frozen commodities (the Agency generally requires at least 100 monitoring data per commodity). Consequently, only the fresh data was used (total number of data = 610, number of detected residues = 15, range of detected residues= 0.003 - 0.027 ppm, LOD range= 0.002 - 0.017 ppm, weighted average ½ LOD = 0.0037 ppm). Since strawberries are considered partially-blended commodities, no decompositing procedure was necessary. An estimated maximum 16% CT for strawberries (according to the 1998 BEAD estimates) was also used in this assessment. The RDF contained 15 detected residues, 90 repeated ½ LOD value at 0.0037 ppm and 505 zeroes. This RDF was also used for strawberry juice along with the DEEM default concentration factor. A chronic residue value of 0.0004 ppm was calculated.

Safflower - No monitoring data were available from USDA-PDP or FDA. In field trial study, the combined residues of naled and dichlorovos were non-detectable (less than 0.03 ppm, expressed in naled equivalent in the study, which converts to less than 0.017 ppm dichlorvos equivalent) only 3 days after the ground application and 1 day after the aerial application (with the same rate); the PHI on the label is 30 days. An estimated maximum 14% CT (according to the 1998 BEAD estimates) was used for safflower in this assessment. Since safflower is considered a bulk and bagged commodity, a Residue Distribution File (RDF) was constructed for safflower using the .rdf file for the treatment of flour as a bulk commodity. A 0.02 reduction factor from S. Hummel's 4/9/98 memo was applied to safflower oil.

Sugar Beets (v2-NalDSbeet.rdf) - No monitoring data were available from USDA-PDP or FDA. Field trial data were conducted at only one site (CA) with more than one applications at the rate

of 1.0-4.0 Lbs ai/A and 2-day PHI by ground equipment. The label does not state the maximum number of application but requires 5 day PHI. The two sample in this field trial had total residues (naled + DDVP expressed as naled equivalent) less than 0.04 ppm for sugar beet roots. At the same site, after only one application with the same application rate (1.0 Lbs ai/A), 2-day PHI but different formulation (Dibrom 8E vs EC) and by air and ground equipment the highest total residue reported , out of 6 samples, was 0.04 ppm. Because of insufficient data at the consistent use pattern, this highest residue value, 0.04 ppm (converts to 0.023 ppm dichlorvos equivalent), rather than the average field trial data, was used in the calculation of residue input for sugar beets. Since sugar beets is considered a blended commodity, a point estimate of 0.00023 ppm- a product of 0.023 ppm and the estimated maximum 1%CT - was used as the residue input for sugar beets. A conservative chronic residue value equal to the same number, 0.00023 ppm, was used.

Walnuts - No monitoring data were available from USDA-PDP or FDA. The limited field trial that are available were conducted at only one application while the number of allowed applications on the label is 10. However, the rate in the field trial was 4 Lbs ai/A which was more than twice the maximum allowed in ground application (1.8 Lb ai/A). No detected residues were found (LOD = 0.02 ppm which converts to 0.012 ppm in dichlorvos equivalents) in those trials. An estimated maximum 4% CT were reported for walnuts (according to 1998 BEAD estimate). A chronic residue value of 0.0004 ppm was calculated as previously described.

Since walnuts can also be treated as a packaged and bagged commodity, which is expected to result in more frequent exposure due to the higher percent crop treated, the .rdf file for nuts as a packaged and bagged commodity was used instead.

Walnut Oil- Walnut oil, which is considered a blended commodity, a point estimate of 0.00024, the product of ½ LOD (0.006 ppm from the agricultural field trials) and 4%CT was used. No processing factors were available for walnut oil. Walnut oil is not expected to contain residues of dichlorvos as a result of treated bulk commodity as permeation of the container of DDVP is not treated.

Mosquito uses (all racs) (NalDMosq.rdf and NalDMMon.rdf). Monitoring data for some of the commodities were available from USDA-PDP and/or FDA. No detectable residues were reported. We have calculated that 1.3% of the crop is treated, based on the proportion of mosquito abatement districts to the total acreage crop land in the US. Field trial data are also available and are used for those crops which do not have monitoring data or monitoring data that can be translated. The mosquito uses have been assessed in previous assessments. This assessment does not include a mosquito use scenario due to the highly unlikely nature of a residue occurring as a result of application.

Risk Characterization:/ Uncertainty

HED conducted a Tier 4-type exposure and risk assessment for Naled (and its expected DDVP degradation products) and DDVP as a result of agricultural uses and bulk and packaged commodity fumigation uses of these pesticide chemicals. The acute assessment was performed using Monte-Carlo analysis and thus is considered to be a "highly refined" estimate using PDP or FDA monitoring data and/or Food and Drug Administration Total Diet Study and incorporates percent crops treated information and cooking factors, when available. Similarly, the chronic assessment was a Tier 3 evaluation which incorporated similar information, when appropriate.

HED's Standard Operating Procedure for translating PDP data (SOP 99.3, dated 3/26/99) was used extensively. In addition, a number of "non-standard" PDP translations were performed for agricultural uses of Naled as well as more extensive translations for fumigation uses of DDVP, when judged appropriate by the HED risk assessor. Bulk and packaged food fumigation was assumed to occur for only non-perishable, dry commodities. Translations among cooking and processing were also applied liberally. Only when no more refined or other ancillary information was available were tolerance level residues or field trial residues used along with DEEM default processing factors.

The assessment demonstrated that exposures to the general U.S. population and all subgroups did not exceed HED's level of concern on either a chronic or acute basis. The subpopulation with the highest exposures for chronic and acute exposures was children 1-6, for both chronic and acute exposure. Approximately 2% of the cPAD and 67% of the aPAD were occupied for this group.

We note that a number of commodities and uses were not included in assessment. For example, turnip tops, cucumbers, lettuce, rice, mushrooms (naled use), and tomatoes were not included in the assessment as their uses have been recommended for revocation in the Naled RED and Naled is not currently registered for use on these crops (although tolerances have not yet been revoked). There is a possibility of Naled residues being present on imported commodities as a result of overseas uses although exposures to these residues would be negligible. Exposures from trichlorfon (for which DDVP is a metabolite) were also not considered: the revised preliminary risk assessment of trichlorfon indicated that DDVP was not a significant residue in the metabolism study and the only exposure from trichlorfon (from imported meat) is considered to be negligible. Residues in bulk-treated peanuts (and peanut butter) were also assumed to be negligible and not included in the assessment based on bulk fumigation studies performed by the registrant and available processing data. In addition, inadvertent residues on crops from mosquitocide uses of naled were not explicitly included in this assessment. These residues would be expected to be negligible, and PDP data (when used) implicitly incorporate any residues resulting from these uses. In addition, this assessment assumed that DDVP residues resulting from fumigation treatment of bulk and packaged commodities did not decline following treatment and exposures occurred at levels expected to be found in the warehouse or fumigation chamber immediately following treatment.

Overall, then, this analysis demonstrates that exposures and risks associated with currently registered uses of naled and DDVP do not exceed HED's level of concern. The acute assessment performed was a refined Monte Carlo type assessment (Tier 4) and the chronic assessment

incorporated percent crop treated and average residues. Any additional refinements to this assessment would require that the registrant perform and submit additional trials to OPP for evaluation and incorporation.

Attachments included are:
Attachment 1. DDVP Quantitative Usage Analysis.
Attachment 2. Naled
Attachment 3. RS7 input file for DEEM
Attachment 4. Acute and Chronic Dichlorvos DEEM Output files.

cc: K.Lowe (SRRD), RRB4 RF, D.Hrdy, S.Hummel, M. Sahafayen, D.Miller, D. Soderberg.
hrdy.david@epa.gov : 703.305.6990: 816A Crystal Mall #2 : Mailcode 7509C

Attachment 1.

QUANTITATIVE USAGE ANALYSIS (QUA)
Dichlorvos
Case No. 310 AI No. 8400
Analyst: John Faulkner
Draft: April 27, 1998

FOOD AND NONFOOD ANIMALS

This analysis is similar to BEAD's 1994 usage analysis of DDVP on livestock and is updated to reflect more recent usage data from the registrant.

Approximately 25,000 - 50,000 pounds a.i. (based on a survey by the registrant) is used annually on food and nonfood animals (cattle, horses, swine/hogs, sheep, goats, furbearing, and poultry) and their premises. However, we do not have a breakdown of how much is used directly on animals and how much is used indirectly on animals; that is, in and around their premises; nor do we have a breakdown among the different kinds of animals.

Livestock, general

Animals treated was derived from pounds a.i. used divided by the application rates. Application rates on livestock (including horses, swine, hogs, sheep, and goats) average about 0.0007 lb. a.i. per animal treatment and vary depending on the formulation and animal. At the average rate 50,000 pounds a.i. would be enough to provide over 70 million animal treatments, which is enough to treat over 40% of livestock in the U.S. once. This upper bound estimate is high for two reasons:

First, from past analyses (Amvac, 1988; DPRA, 1988 and 1993; and USDA, 1990), it appears that except on dairy cattle, direct application of DDVP to livestock is minor. Instead, DDVP is mainly used for treating insects in and around animal premises and feedlots. However, we do not know what portion is for direct treatment. In the QUA table we did not provide ranges since the low estimates are seldom relevant in risk analyses. Instead, we assumed a conservatively high amount in the Estimated Average (Est Avg) column of the Lb ai Applied columns. In the Estimated Maximum (Est Max) column we assumed it was all used for direct treatment.

Second, of those animals that are treated directly, most are treated a number of times. We assumed a conservatively low number of times in the QUA table to derive a conservatively high number of animals treated.

Beef cattle

Little DDVP is likely to be intentionally applied directly to beef cattle. Feedlots are fogged with DDVP, and cattle nearby may get the equivalent of up to a direct treatment. In the QUA table we assumed that the average animal who receives a direct treatment, inadvertently or intentionally, receives a dose of 0.001 lb ai. At that rate there is enough DDVP used on livestock to treat all of the beef slaughtered at least one time. However, much of the DDVP is used to treat other livestock as well as livestock premises. Cattle receiving direct treatment are probably treated multiple times. Using conservative assumptions (that should overestimate risk) we estimated that about 11% of beef cattle are inadvertently treated the equivalent of direct treatment. Our maximum estimate is 22%.

Dairy

Past estimates (1988-90) of percent of dairy cattle receiving direct applications of DDVP range from 30 - 66% when usage on all domestic animals and their premises was about 700,000 lb. a.i. annually. Although usage has decreased on all animals and their premises to less than 10% of this amount, there is no assurance that it has decreased proportionately on dairy cattle.. However, today, more pyrethoids are available as alternatives to DDVP. Expert opinion (DPRA, 1993) indicates that DDVP usage on dairy cows has declined in most areas, but we have no hard data to confirm the degree of reduction of usage on dairy cattle.

In 1995, BEAD estimated that about 14% of the dairy cattle were effectively treated taking into consideration that the cattle were not treated year round. In the current QUA table 22% of the dairy cows are estimated to be treated with DDVP. Considering that the cows are treated on average about 40% of the year, about 10% (22% x 40%) of the milk would be exposed to DDVP.

Poultry

Usage on poultry was not broken out for the 1996 registrant survey, but was for the 1990 survey. Assuming 6,000 - 20,000 lb. a.i.[5] are used on poultry at an application rate of about 0.0001 lb. a.i. per bird treatment, there would be enough to treat about 60 - 200 million birds with one application, which are about 1 - 3% of the birds produced in the U.S. annually or about 20 - 66% of the laying hen population in the USA. USDA (1990) estimated that about 25% of laying hens are treated with DDVP for the northern fowl mite. Assuming that laying hens are treated at least twice, we estimate in the QUA table that 10% are treated. Furthermore, we estimated in 1994 that laying hens are treated about half of the year. Therefore, about 5% of eggs are exposed to DDVP if 10% of the hens are treated about half of the year.

[5]This range is based on 1990 survey data with the lower number reduced approximately in proportion to the reduction in usage from 1990 to 1996 on or around animals.

COMMODITIES

In the 1994 usage analysis we assumed that if the food was exposed anywhere in the storage, distribution, and processing channel, then it was considered treated. Therefore, we summed the percents treated in each phase of the distribution channel. However, since residues dissipate over time, such summing overstates the risk. The QUA table presents each part of the distribution channel separately. HED must determine whether to add, average, or take the highest estimate.

Bulk storage

The quantity of DDVP used on bulk storage plus bagged commodities has increased from 1990 to 1996 according to the registrant's surveys. We increased the previous estimate of percent treated by the same proportion. In some cases we have specific estimates from the PD2/3 comments.

Processing Plants

We do not have any recent information that would allow us to estimate the percent of commodities processed in plants that are treated with DDVP.

Bagged and Packaged Nonperishable Processed Commodities

In the QUA table (and in 1994) we estimated that about 12% of the warehouse space is treated with DDVP. However, since commodities rapidly turn over in warehouses, Amvac estimated that over half of the commodities in a warehouse, which is treated monthly, are not present on the day of treatment. Therefore, about 6% of commodities stored in warehouses are exposed to DDVP. Amvac's analysis seems reasonable.

MOSQUITO ABATEMENT

BEAD's data, which shows usage of the major insecticides used for mosquito abatement, does not include DDVP. DDVP could be aggregated with “all others”. The lowest acre treatments reported for an insecticide is about 1 million. Therefore, DDVP would have to be less, probably much less, if it is used at all.

However, approximately 4 million acre treatments of naled (which is chemically related to DDVP) are applied, which would cover about 1% of cropland, if all naled for mosquito abatement were applied over cropland. However, most mosquito abatement applications are made to urban, residential, recreational areas, and breeding areas such as parts of salt marshes, woodland pools, and to some degree, flood irrigated fields.

Table 7. EPA's QUANTITATIVE USAGE ANALYSIS

Site	Acres Grown (000)	Acres Treated (000)		% of Crop Treated		LB AI Applied (000)		Average Application Rate			States of Most Usage
		Wtd Avg	Est Max	Wtd Avg	Est Max	Wtd Avg	Est Max	lb ai/ acre/yr	#appl / yr	lb ai/ A/appl	(% of total lb ai used on this site)
Tangerines	24	0	1	1%	3%	0	1	1.0	1.0	1.0	CA 100%
Grapefruit	194	0	0	0%	0%	0	0	0.5	3.0	0.2	AZ CA FL TX 100%
Lemons	63	0	0	0%	0%	0	0	1.1	1.0	1.1	CA 100%
Oranges	770	8	18	1%	2%	14	26	1.8	1.3	1.5	CA AZ 100%
Quinces	-	-	-	-	-	-	-	-	-	-	-
Peaches	212	1	2	1%	1%	3	6	3.1	1.0	3.1	CA 94%
Strawberries	50	3	8	7%	16%	6	15	1.9	2.2	0.8	CA 85%
Grapes	795	20	43	3%	5%	27	53	1.4	1.2	1.1	CA 100%
Almonds	429	2	8	1%	2%	7	21	3.0	1.2	2.5	CA 100%
Walnuts	205	3	8	1%	4%	8	23	2.8	1.9	1.5	CA 100%
Celery	34	2	6	7%	18%	4	7	1.7	1.8	1.0	CA MI 100%
Kale	6	-	-	-	-	3	-	-	-	-	-
Lettuce	268	1	2	0%	1%	4	17	5.2	2.9	1.8	CA 100%
Spinach	36	0*	0*	0*	0*	0*	0*	-	-	-	-
Broccoli	107	7	11	6%	10%	8	18	1.2	1.0	1.2	CA 100%

Table 7. EPA's QUANTITATIVE USAGE ANALYSIS

Site	Acres Grown (000)	Acres Treated (000)		% of Crop Treated		LB AI Applied (000)		Average Application Rate			States of Most Usage
		Wtd Avg	Est Max	Wtd Avg	Est Max	Wtd Avg	Est Max	lb ai/ acre/yr	#appl / yr	lb ai/ A/appl	(% of total lb ai used on this site)
Brussels Sprouts	4	1	3	28%	83%	4	6	3.9	3.4	1.1	-
Cabbage	84	5	9	6%	11%	5	9	0.9	1.0	0.9	FL CA 87%
Cauliflower	57	2	15	4%	26%	5	30	2.1	1.1	2.0	FL CA 100%
Collards	15	1	1	4%	7%	1	2	1.3	1.0	1.3	FL SC 91%
Swiss Chard	-	-	-	-	-	-	-	-	-	-	-
Cucumbers	151	0*	0*	0*	0*	0*	0*	-	-	-	-
Pumpkins	41	0*	0*	0*	0*	0*	0*	-	-	-	-
Squash	69	0*	0*	0*	0*	0*	0*	-	-	-	-
Melons	368	0	2	0%	0%	1	5	2.9	1.5	2.0	CA 100%
Root Vegetables	-	0	-	-	-	0	-	-	-	-	-
Eggplant/Peppers	119	0	0	0%	0%	0	0	0.8	1.2	0.7	CA FL 100%
Tomatoes	500	0	1	0%	0%	0	1	1.0	1.3	0.8	CA FL 83%
Vegetables, Other**	286	1	3	0%	1%	5	16	4.3	2.7	1.6	CA OR 88%
Beans/Peas-Green	723	0	4	0%	1%	0	1	1.4	1.4	1.0	FL CA 100%
Beans/Peas-Dry	2,181	1	2	0%	0%	1	4	1.1	1.4	0.8	CA 86%

Table 7. EPA's QUANTITATIVE USAGE ANALYSIS

Site	Acres Grown (000)	Acres Treated (000)		% of Crop Treated		LB AI Applied (000)		Average Application Rate			States of Most Usage
		Wtd Avg	Est Max	Wtd Avg	Est Max	Wtd Avg	Est Max	lb ai/ acre/yr	#appl / yr	lb ai/ A/appl	(% of total lb ai used on this site)
Pasture/Rangeland	-	-	-	-	-	-	-	-	-	-	-
Alfalfa	23,949	23	41	0%	0%	32	67	1.4	1.6	0.9	ID OR 90%
Peanuts	1,824	0*	0*	0*	0*	0*	0*	-	-	-	-
Safflower	243	22	33	9%	14%	17	25	0.8	1.2	0.7	CA 100%
Soybeans	59,288	0*	0*	0*	0*	0*	0*	-	-	-	-
Rice	2,991	0*	0*	0*	0*	0*	0*	-	-	-	-
Cotton	12,689	90	176	1%	1%	120	250	1.3	1.2	1.1	CA LA 100%
Sugar Beets	1,434	4	8	0%	1%	4	8	0.9	1.0	0.9	CA 88%
Hops	-	-	-	-	-	-	-	-	-	-	-
Mushrooms	-	-	-	-	-	-	-	-	-	-	-
Tobacco	-	-	-	-	-	-	-	-	-	-	-
Livestock	-	-	-	-	-	-	-	-	-	-	-
Dairy	-	-	-	-	-	-	-	-	-	-	-
Poultry	-	-	-	-	-	-	-	-	-	-	-
Eating Establishments	-	-	-	-	-	-	-	-	-	-	
Food Processing & Handling	-	-	-	-	-	-	-	-	-	-	

Table 7. EPA's QUANTITATIVE USAGE ANALYSIS

Site	Acres Grown (000)	Acres Treated (000)		% of Crop Treated		LB AI Applied (000)		Average Application Rate			States of Most Usage
		Wtd Avg	Est Max	Wtd Avg	Est Max	Wtd Avg	Est Max	lb ai/ acre/yr	#appl / yr	lb ai/ A/appl	(% of total lb ai used on this site)
Food Storage Facilities	-	-	-	-	-	-	-	-	-	-	
Total of above:	**110,209**	**200**	**303 ******			**280**	**447 ********				
Average of above				**0.2%**	**0.4%**			**1.4**			
Mosquito Abatement Districts (MADS) ***	103,500 [1]	7,000 [2]	12,000	-	12% [3]	700	1,200			0.1	
Dogs & Cats						20	30				
Grand Total						**1,000**	**1,422 ********				

COLUMN HEADINGS

Wtd Avg = Weighted average--the most recent years and more reliable data are weighted more heavily.
Est Max = Estimated maximum, which is estimated from available data.
Average application rates are calculated from the weighted averages.

NOTES ON TABLE DATA

Usage data covers 1987- 96 for agriculture, and up to 1997 for nonag.
Calculations of the above numbers may not appear to agree because they are displayed as rounded:
to the nearest 1000 for acres treated or lb. a.i. (Therefore 0 = < 500)
to the nearest whole percentage point for % of crop treated. (Therefore 0% = < 0.5%)

0* = Available EPA sources indicate that no usage is observed in the reported data for this site, which implies that there is little or no usage.
A dash (-) indicates that information on this site is NOT available within EPA or is insufficient to provide an estimate.

Table 7. EPA's QUANTITATIVE USAGE ANALYSIS

** Vegetables, Other includes, artichokes, asparagus, okra, oriental vegetables, rhubarb, and truck garden, which are not registered.
*** For MADs in terms of:
[1] Available acres (000) for treatment
[2] Acre treatments (000)
[3] % of available acres treated.
**** Total Est Max = the average of the sum of the weighted averages and estimated maximums.

SOURCES: EPA data (1987-97), USDA (1990-96), and National Center for Food and Agricultural Policy (1992 data).

Attachment 3: RS7 input file for DEEM.

```
"2,2-Dichlorovinyl dimethyl phosphate; DDVP"
 0.0002
NEWMCD, 0.0005
NOEL,          0.05  0.5  0
06-07-2000/11:17:15
 55
 1  6 "ddvpcoco.rdf", 1
cocoa
 2  6 "ddvpcoff.rdf", 1
coffee
 3  6 "ddvpdbea.rdf", 1
dried beans
 4  6 "ddvpflou.rdf", 1
flour (tranlsate to dried fruits)
 5  6 "ddvpgrai.rdf", 1
grain
 6  6 "ddvpmush.rdf", 1
mushroom
 7  6 "ddvpnuts.rdf", 1
tree nuts
 8  6 "ddvppean.rdf", 1
peanuts (use shelling and roasting factor)
 9  6 "ddvpsoy.rdf", 1
soybeans
 10  6 "ddvpeggs.rdf", 1
eggs
 11  6 "ddvpmeat.rdf", 1
meat
 12  6 "ddvpmilk.rdf", 1
milk
 13  6 "ddvppoul.rdf", 1
poultry
 14  6 "ddvppb.rdf", 1
peanut butter (use roasting and shelling factor)
 15  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-DPoult-egg.rdf", 1
eggs
 16  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-DMeat.rdf", 1
meat
 17  6 "C:\dhrdy\a\MyFiles\ddvp\dea2\v2-DMilk.rdf", 1
milk
 18  6 "C:\dhrdy\a\MyFiles\ddvp\dea2\v2-DPoult-egg.rdf", 1
poultry
 19  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDAlm.rdf", 1
almonds
 20  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDBroc.rdf", 1
broccoli
 21  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDBrsS.rdf", 1
```

```
brussels sprouts
 22  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDcabb.rdf", 1
cabbage
 23  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDCaul.rdf", 1
Cauliflower
 24  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDCelery.rdf", 1
Celery
 25  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDCollrd.rdf", 1
Collard
 26  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDCucum.rdf", 1
Cucumber
 27  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDEggpl.rdf", 1
Eggplant
 28  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGB.rdf", 1
Green beans
 29  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGB-can.rdf", 1
Canned Green beans
 30  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGB-frozn.rdf", 1
Frozen Green beans
 31  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGrape.rdf", 1
Grape
 32  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGrf.rdf", 1
Grapefruit
 33  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGrfJ-CO.rdf", 1
Co Grape Fruit Juice
 34  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGrfJ-RE.rdf", 1
Re Grape Fruit Juice
 35  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGrpJ-CO.rdf", 1
Co Grape Juice
 36  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDGrpJ-RE.rdf", 1
Re Grape Juice
 37  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDhops.rdf", 1
hops
 38  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDLemon.rdf", 1
lemon
 39  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDlettuce.rdf", 1
lettuce
 40  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDMel.rdf", 1
melon
 41  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDoran.rdf", 1
oranges
 42  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDOranJuice-CO.rdf", 1
Co  Orange juice
 43  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDOranJuice-RE.rdf", 1
Re  Orange juice
 44  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDPch.rdf", 1
Peaches
 45  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDPepp.rdf", 1
```

```
Peppers
 46  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDSbeet.rdf", 1
Sugar beets
 47  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDSpin.rdf", 1
Spinach
 48  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDSqua-fr.rdf", 1
Fresh Squash
 49  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDSqua-fz.rdf", 1
Frozen Squash
 50  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDStrawb.rdf", 1
Strawberries
 51  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDTangerine.rdf", 1
Tangerines
 52  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDTom.rdf", 1
Tomatoes
 53  6 "C:\dhrdy\a\MyFiles\ddvp\DEA\v2-NalDWaln-fr.rdf", 1
Walnuts
 54  6 "v2-NalD-greenPeas.rdf", 1
greenpeas
 55  6 "v2-DMilk.rdf", 1
milk
-1  "This is an acute run with PDP, tolerances, field trial residue values
and percent crop treated."
 999  1
 10 "01011AA","13B", 0.007  4  1  1  1  0 "Currants", ""
 13 "01014AA","O", 0.00005  31  1  1  1  0 "Grapes", ""
 14 "01014DA","O", 0.007  4  1  1  1  0 "Grapes-raisins", ""
 15 "01014JA","O", 0.00005  36  1  1  1  0 "Grapes-juice", ""
 17 "01016AA","O", 0.0004  50  1  1  1  0 "Strawberries", ""
 22 "02002AB","10", 0.00005  32  1  1  1  0 "Grapefruit-peeled fruit", ""
 23 "02002JA","10", 0.00005  33  1  1.17  1  0 "Grapefruit-juice", ""
 26 "02004AB","10", 0.00005  38  1  1  1  0 "Lemons-peeled fruit", ""
 27 "02004HA","10", 0.00005  38  1  1  1  0 "Lemons-peel", ""
 28 "02004JA","10", 0.00005  38  1  1.11  1  0 "Lemons-juice", ""
 30 "02005AB","10", 0.00005  38  1  1  1  0 "Limes-peeled fruit", ""
 31 "02005HA","10", 0.00005  38  1  1  1  0 "Limes-peel", ""
 32 "02005JA","10", 0.00005  38  1  1.11  1  0 "Limes-juice", ""
 33 "02006JC","10", 0.00004  42  1  3.72  1  0 "Oranges-juice-concentrate",
""
 34 "02006AB","10", 0.00003  41  1  1  1  0 "Oranges-peeled fruit", ""
 35 "02006HA","10", 0.00003  41  1  1  1  0 "Oranges-peel", ""
 36 "02006JA","10", 0.00004  43  1  1  1  0 "Oranges-juice", ""
 38 "02008AA","10", 0.00005  51  1  1  1  0 "Tangerines", ""
 39 "02008JA","10", 0.00005  51  1  1.28  1  0 "Tangerines-juice", ""
 40 "03001AA","14", 0.001  19  1  1  1  0 "Almonds", ""
 41 "03002AA","14", 0.001  7  1  1  1  0 "Brazil nuts", ""
 42 "03003AA","14", 0.001  7  1  1  1  0 "Cashews", ""
 43 "03004AA","14", 0.001  7  1  1  1  0 "Chestnuts", ""
```

```
44 "03005AA","14", 0.001  7  1  1  1  0 "Filberts (hazelnuts)", ""
45 "03006AA","14", 0.001  7  1  1  1  0 "Hickory nuts", ""
46 "03007AA","14", 0.001  7  1  1  1  0 "Macadamia nuts (bush nuts)", ""
47 "03008AA","14", 0.001  7  1  1  1  0 "Pecans", ""
48 "03009AA","14", 0.001  53  1  1  1  0 "Walnuts", ""
50 "03011AA","O", 0.00005  7  1  1  1  0 "Pistachio nuts", ""
53 "04001DA","11", 0.005  44  1  1  1  4 "Apples-dried", ""
    13 Baked, 0.005  4  1  0.1  1 ""
    14 Boiled, 0.005  4  1  0.1  1 ""
    18 Dried, 0.005  4  1  1  1 ""
    42 Frozen: Cooked, 0.005  4  1  0.1  1 ""
57 "04003DA","11", 0.007  4  1  1  1  0 "Pears-dried", ""
60 "05001DA","12", 0.005  4  1  1  1  3 "Apricots-dried", ""
    13 Baked, 0.005  4  1  0.1  1 ""
    14 Boiled, 0.005  4  1  0.1  1 ""
    18 Dried, 0.005  4  1  1  1 ""
62 "05002DA","12", 0.005  4  1  1  1  0 "Cherries-dried", ""
65 "05004AA","12", 0.00002  44  1  1  1  0 "Peaches", ""
66 "05004DA","12", 0.007  4  1  1  1  0 "Peaches-dried", ""
68 "05005DA","12", 0.007  4  1  1  1  0 "Plums-prunes (dried)", ""
73 "06002DA","O", 0.005  4  1  0.1  1  0 "Bananas-dried", ""
74 "06003AA","O", 0.0006  1  1  1  1  3 "Coconut", ""
    11 Uncooked, 0.0006  1  1  1  1 ""
    13 Baked, 0.0006  1  1  0.1  1 ""
    14 Boiled, 0.0006  1  1  0.1  1 ""
75 "06003DA","O", 0.0006  1  1  0.003  1  0 "Coconut-dried (copra)", ""
76 "06003JA","O", 0.0006  1  1  1  1  0 "Coconut-water", ""
77 "06004AA","O", 0.007  4  1  1  1  0 "Dates", ""
78 "06005AA","O", 0.02  4  1  1  1  2 "Figs", ""
    11 Uncooked, 0.02  4  1  1  1 ""
    13 Baked, 0.02  4  1  0.1  1 ""
85 "06010DA","O", 0.007  4  1  1  1  0 "Papayas-dried", ""
90 "06013DA","O", 0.007  4  1  1  1  0 "Pineapples-dried", ""
96 "06017DA","O", 0.007  4  1  1  1  0 "Lychee-dried", ""
110 "07001FA","O", 0.0006  1  1  0.003  1  0 "Chocolate-cocoa butter", ""
111 "07001SA","O", 0.0006  1  1  0.003  1  0 "Chocolate", ""
112 "07002AA","O", 0.003  2  1  1  1  0 "Coffee", ""
113 "07003AA","O", 0.007  4  1  0.1  1  0 "Tea", ""
115 "08004AA","19B", 0.007  4  1  1  1  2 "Anise", ""
    14 Boiled, 0.007  4  1  0.1  1 ""
    52 Cured: Cooked(smokd/, 0.007  4  1  0.1  1 ""
116 "08006AA","19A", 0.007  4  1  1  1  0 "Basil", ""
117 "08007AA","19B", 0.007  4  1  1  1  0 "Caraway", ""
119 "08011AA","19B", 0.007  4  1  1  1  0 "Cinnamon", ""
120 "08012AA","19B", 0.007  4  1  1  1  0 "Clove", ""
121 "08013AA","19B", 0.007  4  1  1  1  0 "Coriander", ""
122 "08014AA","19B", 0.007  4  1  1  1  0 "Cumin", ""
123 "08015AA","19A", 0.007  4  1  1  1  0 "Dill", ""
```

```
124 "08019AA","1CD", 0.007  4  1  1  1  0 "Ginger", ""
125 "08020AA","O", 0.04  37  1  1  1  0 "Hops", ""
127 "08023AA","19A", 0.007  4  1  1  1  0 "Rosemary", ""
128 "08026AA","19A", 0.007  4  1  1  1  0 "Marjoram", ""
129 "08026AB","19A", 0.007  4  1  1  1  0 "Oregano", ""
130 "08028AA","19B", 0.007  4  1  1  1  0 "Mustard seed", ""
131 "08029AA","19B", 0.007  4  1  1  1  0 "Nutmeg", ""
132 "08029AB","19B", 0.007  4  1  1  1  0 "Mace", ""
133 "08035AA","19A", 0.007  4  1  1  1  0 "Sage", ""
134 "08036AA","19A", 0.007  4  1  1  1  0 "Savory", ""
135 "08038AA","19A", 0.007  4  1  1  1  0 "Bay", ""
136 "08042AA","19A", 0.007  4  1  1  1  0 "Thyme", ""
137 "08043AA","1CD", 0.007  4  1  1  1  0 "Turmeric", ""
138 "08047AA","19B", 0.007  4  1  1  1  0 "Allspice", ""
139 "08048DA","8", 0.007  4  1  1  1  0 "Paprika", ""
140 "08049AA","19B", 0.007  4  1  1  1  0 "Poppy", ""
141 "10002NA","9A", 0.000009  40  1  1  1  0 "Melons-cantaloupes-juice", ""
142 "10002AB","9A", 0.000009  40  1  1  1  0 "Melons-cantaloupes-pulp", ""
145 "10005AA","9A", 0.000009  40  1  1  1  0 "Melons-honeydew", ""
146 "10007AA","9A", 0.000009  40  1  1  1  0 "Melons-persian", ""
149 "10011AA","9B", 0.00001  26  1  1  1  0 "Pumpkin", ""
150 "10013AA","9B", 0.00001  48  1  1  1  8 "Squash-summer", ""
    11 Uncooked, 0.00001  48  1  1  1 ""
    12 Cooked: NFS, 0.00001  48  1  1  1 ""
    13 Baked, 0.00001  48  1  1  1 ""
    14 Boiled, 0.00001  48  1  1  1 ""
    15 Fried, 0.00001  48  1  1  1 ""
    34 Canned: Boiled, 0.00001  48  1  1  1 ""
    42 Frozen: Cooked, 0.00009  49  1  1  1 ""
    51 Cured: NFS (smoked/p, 0.00001  48  1  1  1 ""
151 "10014AA","9B", 0.00001  48  1  1  1  4 "Squash-winter", ""
    11 Uncooked, 0.00001  48  1  1  1 ""
    12 Cooked: NFS, 0.00001  48  1  1  1 ""
    13 Baked, 0.00001  48  1  1  1 ""
    14 Boiled, 0.00001  48  1  1  1 ""
154 "11001AA","8", 0.003  27  1  1  1  0 "Eggplant", ""
155 "11003AA","8", 0.005  45  1  1  1  0 "Peppers-sweet(garden)", ""
156 "11003AB","8", 0.005  45  1  1  1  0 "Peppers-chilli incl jalapeno", ""
157 "11003AD","8", 0.005  45  1  1  1  0 "Peppers-other", ""
166 "13002AA","4B", 0.0003  24  1  1  1  0 "Celery", ""
168 "13005AA","5A", 0.0001  20  1  1  1  0 "Broccoli", ""
169 "13006AA","5A", 0.001  21  1  1  1  0 "Brussels sprouts", ""
170 "13007AA","5A", 0.0006  22  1  1  1  0 "Cabbage-green and red", ""
171 "13008AA","5A", 0.00015  23  1  1  1  0 "Cauliflower", ""
172 "13009AA","5B", 0.0004  25  1  1  1  0 "Collards", ""
174 "13011AA","5B", 0.0004  25  1  1  1  0 "Kale", ""
179 "13016AA","19B", 0.007  4  1  1  1  0 "Fennel", ""
184 "13022AA","4A", 0.007  4  1  1  1  8 "Parsley", ""
```

```
     11 Uncooked, 0.007  4  1  1  1 ""
     12 Cooked: NFS, 0.007  4  1  0.1  1 ""
     13 Baked, 0.007  4  1  0.1  1 ""
     14 Boiled, 0.007  4  1  0.1  1 ""
     15 Fried, 0.007  4  1  0.1  1 ""
     31 Canned: NFS, 0.007  4  1  0.1  1 ""
     32 Canned: Cooked, 0.007  4  1  0.1  1 ""
     34 Canned: Boiled, 0.007  4  1  0.1  1 ""
 186 "13024AA","4A", 0.00002  47  1  1  1  0 "Spinach", ""
 187 "13025AA","4B", 0.0004  25  1  1  1  0 "Swiss chard", ""
 195 "13049AA","O", 0.00005  31  1  1  1  0 "Grapes-leaves", ""
 200 "14005AA","19A", 0.007  4  1  1  1  0 "Chives", ""
 206 "14011DA","3", 0.007  4  1  1  1  0 "Onions-dehydrated or dried", ""
 210 "14013DA","1C", 0.0075  0  0  6.5  0.2  0 "Potatoes/white-dry", ""
 227 "15001AA","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-great northern",
""
 228 "15001AB","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-kidney", ""
 229 "15001AC","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-lima", ""
 230 "15001AD","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-navy (pea)", ""
 231 "15001AE","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-other", ""
 232 "15001AF","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-pinto", ""
 234 "15003AA","6A", 0.000009  28  1  1  1  9 "Beans-succulent-green", ""
     11 Uncooked, 0.000009  28  1  1  1 ""
     12 Cooked: NFS, 0.000009  29  1  1  1 ""
     14 Boiled, 0.000009  29  1  1  1 ""
     31 Canned: NFS, 0.000009  29  1  1  1 ""
     32 Canned: Cooked, 0.000009  29  1  1  1 ""
     34 Canned: Boiled, 0.000009  29  1  1  1 ""
     42 Frozen: Cooked, 0.00002  30  1  1  1 ""
     44 Frozen: Boiled, 0.00002  30  1  1  1 ""
     51 Cured: NFS (smoked/p, 0.000009  29  1  1  1 ""
 237 "15004AA","15", 0.00006  6  1  0.12  1  0 "Corn/pop", ""
 240 "15007AA","6C", 0.00005  3  1  0.009  1  0 "Peas (garden)-dry", ""
 241 "15009AA","6AB", 0.000015  54  1  0.009  1  0 "Peas (garden)-green", ""
 243 "15011AB","6C", 0.00005  3  1  0.009  1  0 "Lentils", ""
 247 "15020AA","O", 0.007  1  1  0.003  1  0 "Carob", ""
 249 "15022AA","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-broadbeans", ""
 251 "15023AA","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-pigeon beans", ""
 252 "15026AA","O", 0.00005  9  1  1  1  4 "Sesame seeds", ""
     11 Uncooked, 0.00005  9  1  1  1 ""
     13 Baked, 0.00005  9  1  0.1  1 ""
     14 Boiled, 0.00005  9  1  0.1  1 ""
     42 Frozen: Cooked, 0.00005  9  1  0.1  1 ""
 254 "15028AA","O", 0.00005  9  1  1  1  0 "Pinenuts", ""
 256 "15030AA","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-hyacinth", ""
 258 "15031AA","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-blackeye
peas/cowpea", ""
```

```
 259 "15032AA","6C", 0.0006  3  1  0.009  1  0 "Beans-dry-garbanzo/chick
pea", ""
 265 "24001AA","15", 0.00006  6  1  0.12  1  0 "Barley", ""
 266 "24002EA","15", 0.00006  6  1  0.12  1  0 "Corn grain-endosperm", ""
 267 "24002HA","15", 0.00006  6  1  0.12  1  0 "Corn grain-bran", ""
 269 "24003AA","15", 0.00006  6  1  0.12  1  0 "Oats", ""
 270 "24004AA","15", 0.00006  5  1  0.3  1  0 "Rice-rough (brown)", ""
 271 "24004AB","15", 0.00006  5  1  0.3  1  0 "Rice-milled (white)", ""
 272 "24005AA","15", 0.00006  6  1  0.12  1  0 "Rye-rough", ""
 273 "24005GA","15", 0.00006  6  1  0.12  1  0 "Rye-germ", ""
 274 "24005WA","15", 0.00006  5  1  0.12  1  0 "Rye-flour", ""
 275 "24006AA","15", 0.00006  6  1  0.12  1  0 "Sorghum (including milo)",
""
 276 "24007AA","15", 0.00006  6  1  0.12  1  0 "Wheat-rough", ""
 277 "24007GA","15", 0.00006  6  1  0.12  1  0 "Wheat-germ", ""
 278 "24007HA","15", 0.00006  6  1  0.12  1  0 "Wheat-bran", ""
 279 "24007WA","15", 0.00006  5  1  0.12  1  0 "Wheat-flour", ""
 280 "24012AA","15", 0.00006  6  1  0.12  1  0 "Millet", ""
 282 "25002SA","1A", 0.0002  0  0  1  1  0 "Sugar-beet", ""
 283 "25003SA","O", 0.00005  5  1  1  1  0 "Sugar-cane", ""
 286 "26001AA","15", 0.00006  6  1  0.12  1  0 "Buckwheat", ""
 287 "26011AA","6C", 0.005  9  1  0.009  1  0 "Guar beans", ""
 289 "27002OA","15", 0.00006  6  1  0.12  1  0 "Corn grain-oil", ""
 290 "27003OA","O", 0.0029  0  0  1  1  0 "Cottonseed-oil", ""
 291 "27003WA","O", 0.0029  0  0  1  1  0 "Cottonseed-meal", ""
 292 "27004AA","O", 0.005  9  1  1  1  0 "Flax seed", ""
 293 "27007OA","O", 0.001  3  1  0.01  1  0 "Peanuts-oil", ""
 294 "27008AA","O", 0.001  0  0  1  1  0 "Safflower-seed", ""
 295 "27008OA","O", 0.001  0  0  0.02  1  0 "Safflower-oil", ""
 296 "27009OA","O", 0.00005  0  0  1  1  0 "Sesame-oil", ""
 297 "27010OA","6A", 0.0009  9  1  0.001  0.2  0 "Soybeans-oil", ""
 298 "27011OA","O", 0.00005  9  1  0.02  1  0 "Sunflower-oil", ""
 299 "27015OA","O", 0.0006  1  1  1  1  0 "Coconut-oil", ""
 301 "27017OL","O", 0.005  9  1  1  1  0 "Canola oil (rape seed oil)", ""
 303 "15023AA","6A", 0.0009  9  1  0.12  1  0 "Soybean-other", ""
 304 "28023AB","6A", 0.0009  9  1  0.009  1  0 "Soybeans-mature seeds dry",
""
 305 "28023WA","6A", 0.0009  4  1  0.12  1  0 "Soybeans-flour (full fat)",
""
 306 "28023WB","6A", 0.0009  4  1  0.12  1  0 "Soybeans-flour (low fat)", ""
 307 "28023WC","6A", 0.0009  4  1  0.12  1  0 "Soybeans-flour (defatted)",
""
 309 "28040AA","O", 0.00005  9  1  1  1  3 "Seeds (misc.)", ""
     11 Uncooked, 0.00005  9  1  1  1 ""
     13 Baked, 0.00005  9  1  0.1  1 ""
     14 Boiled, 0.00005  9  1  0.1  1 ""
 315 "43058AA","O", 0.00005  36  1  1  1  0 "Grapes-wine and sherry", ""
 318 "50000DB","D", 0.00007  55  1  0.92  1  0 "Milk-nonfat solids", ""
```

```
 319 "50000FA","D", 0.00007  55  1  0.92  1  0 "Milk-fat solids", ""
 320 "50000SA","D", 0.00007  55  1  0.92  1  0 "Milk sugar (lactose)", ""
 321 "53001BA","M", 0.0001  16  1  0.3  0.31  0 "Beef-meat byproducts", ""
 322 "53001BB","M", 0.0001  16  1  0.3  5  0 "Beef-other organ meats", ""
 323 "53001DA","M", 0.0001  16  1  1.92  0.31  0 "Beef-dried", ""
 324 "53001FA","M", 0.0001  16  1  0.3  0.055  0 "Beef-fat w/o bones", ""
 325 "53001KA","M", 0.0001  16  1  0.3  1.8  0 "Beef-kidney", ""
 326 "53001LA","M", 0.0001  16  1  0.3  5  0 "Beef-liver", ""
 327 "53001MA","M", 0.0001  16  1  0.3  0.31  0 "Beef-lean (fat/free) w/o
bones", ""
 328 "53002BA","M", 0.0001  16  1  0.3  5  0 "Goat-meat byproducts", ""
 329 "53002BB","M", 0.0001  16  1  0.3  5  0 "Goat-other organ meats", ""
 330 "53002FA","M", 0.0001  16  1  0.3  0.055  0 "Goat-fat w/o bone", ""
 331 "53002KA","M", 0.0001  16  1  0.3  1.8  0 "Goat-kidney", ""
 332 "53002LA","M", 0.0001  16  1  0.3  5  0 "Goat-liver", ""
 333 "53002MA","M", 0.0001  16  1  0.3  0.31  0 "Goat-lean (fat/free) w/o
bone", ""
 334 "53003AA","M", 0.0001  16  1  0.3  0.4  0 "Horsemeat", ""
 335 "53004AA","M", 0.0001  16  1  0.3  0.31  0 "Rabbit", ""
 336 "53005BA","M", 0.0001  16  1  0.3  0.31  0 "Sheep-meat byproducts", ""
 337 "53005BB","M", 0.0001  16  1  0.3  5  0 "Sheep-other organ meats", ""
 338 "53005FA","M", 0.0001  16  1  0.3  0.055  0 "Sheep-fat w/o bone", ""
 339 "53005KA","M", 0.0001  16  1  0.3  1.8  0 "Sheep-kidney", ""
 340 "53005LA","M", 0.0001  16  1  0.3  5  0 "Sheep-liver", ""
 341 "53005MA","M", 0.0001  16  1  0.3  0.031  0 "Sheep-lean (fat free) w/o
bone", ""
 342 "53006BA","M", 0.0001  0  0  0.3  0.31  0 "Pork-meat byproducts", ""
 343 "53006BB","M", 0.0001  16  1  0.3  5  0 "Pork-other organ meats", ""
 344 "53006FA","M", 0.0001  16  1  0.3  0.055  0 "Pork-fat w/o bone", ""
 345 "53006KA","M", 0.0001  16  1  0.3  1.8  0 "Pork-kidney", ""
 346 "53006LA","M", 0.0001  16  1  0.3  5  0 "Pork-liver", ""
 347 "53006MA","M", 0.0001  16  1  0.3  0.031  0 "Pork-lean (fat free) w/o
bone", ""
 355 "55008BA","P", 0.001  13  1  0.3  5  0 "Turkey-byproducts", ""
 356 "55008LA","P", 0.001  13  1  0.3  5  0 "Turkey-giblets (liver)", ""
 357 "55008MA","P", 0.001  13  1  0.3  0.055  0 "Turkey--fat w/o bones", ""
 358 "55008MB","P", 0.001  13  1  0.3  0.31  0 "Turkey- lean/fat free w/o
bones", ""
 360 "55013BA","P", 0.001  0  0  0.3  0.03  0 "Poultry-other-lean (fat free)
w/o bone", ""
 361 "55013LA","P", 0.001  0  0  0.3  0.03  0
"Poultry-other-giblets(liver)", ""
 362 "55013MA","P", 0.001  0  0  0.3  0.03  0 "Poultry-other-fat w/o bones",
""
 363 "55014AA","P", 0.002  15  1  0.62  0.05  0 "Eggs-whole", ""
 364 "55014AB","P", 0.002  15  1  0.62  0.05  0 "Eggs-white only", ""
 365 "55014AC","P", 0.002  15  1  0.62  0.05  0 "Eggs-yolk only", ""
 366 "55015BA","P", 0.001  13  1  0.3  5  0 "Chicken-byproducts", ""
```

```
 367 "55015LA","P", 0.001  13  1  0.3  5  0 "Chicken-giblets(liver)", ""
 368 "55015MA","P", 0.001  13  1  0.3  0.055  0 "Chicken-fat w/o bones", ""
 369 "55015MB","P", 0.001  13  1  0.3  0.31  0 "Chicken-lean/fat free w/o
bones", ""
 379 "25002MO","1A", 0.0002  0  0  1  1  0 "Sugar-beet-molasses", ""
 381 "08031AA","19B", 0.007  4  1  1  1  0 "Pepper/black", ""
 383 "13007SA","5B", 0.0006  22  1  1  1  0 "Cabbage-savoy", ""
 384 "13002JA","4B", 0.0003  24  1  0.1  1  0 "Celery juice", "From tomato
juice processing factor."
 385 "55015EL","P", 0.001  13  1  0.3  5  0 "Chicken-giblets (excl. liver)",
""
 387 "06003MK","O", 0.0006  1  1  1  1  0 "Coconut-milk", ""
 392 "01014JC","O", 0.00005  35  1  3  1  0 "Grapes-juice-concentrate", ""
 398 "50000WA","D", 0.00007  55  1  0.92  1  0 "Milk-based water", ""
 399 "24003BR","15", 0.00006  6  1  0.12  1  0 "Oats-bran", ""
 402 "05004JA","12", 0.00002  44  1  1  1  0 "Peaches-juice", ""
 408 "24004BR","15", 0.00006  5  1  0.3  1  0 "Rice-bran", ""
 409 "24013AA","15", 0.00006  5  1  0.3  1  0 "Rice-wild", ""
 415 "10019AA","9B", 0.00001  48  1  1  1  0 "Squash-spaghetti", ""
 416 "01016JA","O", 0.0004  50  1  1  1  0 "Strawberries-juice", ""
 417 "15018HA","O", 0.00005  9  1  1  1  0 "Sunflower-seeds", ""
 420 "02008JC","10", 0.00005  51  1  4.08  1  0
"Tangerines-juice-concentrate", ""
 424 "56000FA","M", 0.0001  16  1  0.3  0.055  0 "Veal-fat w/o bones", ""
 425 "56000MA","M", 0.0001  16  1  0.3  0.31  0 "Veal-lean (fat free) w/o
bones", ""
 426 "56000KA","M", 0.0001  16  1  0.3  1.8  0 "Veal-kidney", ""
 427 "56000LA","M", 0.0001  16  1  0.3  5  0 "Veal-liver", ""
 428 "56000BB","M", 0.0001  16  1  0.3  5  0 "Veal-other organ meats", ""
 429 "56000DA","M", 0.0001  16  1  0.3  1  0 "Veal-dried", ""
 430 "56000BA","M", 0.0001  16  1  0.3  0.31  0 "Veal-meat byproducts", ""
 431 "030090L","14", 0.001  9  1  0.02  1  0 "Walnut oil", ""
 437 "24007OL","15", 0.00006  6  1  0.12  1  0 "Wheat-germ oil", ""
 441 "02002JC","10", 0.00005  34  1  4.58  1  0
"Grapefruit-juice-concentrate", ""
 442 "02004JC","10", 0.00005  38  1  6.3  1  0 "Lemons-juice-concentrate",
""
 443 "02005JC","10", 0.00005  38  1  3.33  1  0 "Limes-juice-concentrate",
""
 447 "No Code","4A", 0.007  4  1  1  1  0 "Chervil", ""
 448 "02002HA","10", 0.00005  32  1  1  1  0 "Grapefruit peel", ""
 449 "No Code","P", 0.001  13  1  0.3  5  0 "Turkey-other organ meats", ""
 450 "No Code","1AB", 0.007  4  1  1  1  0 "Ginseng", ""
 451 "No Code","5A", 0.0001  20  1  1  1  0 "Broccoli-chinese", ""
 467 "08010AA","19B", 0.007  4  1  1  1  0 "Celery seed", ""
 481 "06016DA","O", 0.007  4  1  1  1  0 "Plantains-dried", ""
 494 "No Code","O", 0.007  4  1  1  1  0 "Saffron", ""
 495 "No Code","O", 0.007  4  1  1  1  0 "Cilantro", ""
```

```
895 "No Code","0", 0.007  4  1  1  1  0 "Psyllium", ""
940 "No Code","0", 0.0006  3  1  1  1  5 "Peanuts-hulled", ""
    12 Cooked: NFS, 0.0006  3  1  1  1 ""
    13 Baked, 0.0006  3  1  0.003  1 ""
    14 Boiled, 0.0006  3  1  0.009  1 ""
    15 Fried, 0.0006  3  1  1  1 ""
    41 Frozen: NFS, 0.0006  3  1  1  1 ""
```

Attachment 4. Acute and Chronic Dichlorvos DEEM Output files.

U.S. Environmental Protection Agency

DEEM ACUTE analysis for 2,2-DICHLOROVINYL DIMETHYL PHOSPHATE; DDVP

Ver. 7.075

Residue file: 1nal084001rdea.RS7 (1989-92 data)
Analysis Date: 06-07-2000/11:56:30 Residue file dated: 06-07-2000/11:17:15/8
Adjustment factor #2 used.
NOEL (Acute) = 0.500000 mg/kg body-wt/day
Daily totals for food and foodform consumption used.
MC iterations = 1000 MC list in residue file MC seed = 10281
Run Comment: "This is an acute run with PDP, tolerances, field trial residue v
alues and percent crop treated."

Summary calculations (per capita):

	95th Percentile			99th Percentile			99.9th Percentile	
	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE	Exposure	% aRfD	MOE
U.S. Population:	0.000018	3.66	27305	0.000044	8.72	11470	0.000145	28.93	3456
All infants:	0.000022	4.49	22281	0.000072	14.37	6956	0.000308	61.54	1624
Children 1-6 yrs:	0.000034	6.86	14569	0.000087	17.42	5741	0.000334	66.73	1498
Children 7-12 yrs:	0.000022	4.34	23017	0.000050	9.98	10022	0.000167	33.41	2993
Females 13-50 yrs:	0.000013	2.62	38232	0.000032	6.32	15814	0.000085	16.91	5913
Males 20+ yrs:	0.000018	3.54	28287	0.000042	8.39	11914	0.000107	21.34	4685
Seniors 55+:	0.000013	2.65	37670	0.000030	5.92	16890	0.000101	20.13	4967

U.S. Environmental Protection Agency Ver. 7.075

DEEM Chronic analysis for 2,2-DICHLOROVINYL DIMETHYL PHOSPHATE; DDVP (1989-92 data)

Residue file name: C:\dhrdy\a\MyFiles\ddvp\DEA\1nal084001rdea.RS7 Adjustment factor #2 used.

Analysis Date 06-07-2000/12:14:29 Residue file dated: 06-07-2000/11:17:15/8

Reference dose (RfD, Chronic) = .0002 mg/kg bw/day

COMMENT 1: This is an acute run with PDP, tolerances, field trial residue values and percent crop treated.

Total exposure by population subgroup

Population Subgroup	Total Exposure mg/kg body wt/day	Total Exposure Percent of Rfd
U.S. Population (total)	0.000002	0.9%
U.S. Population (spring season)	0.000002	0.9%
U.S. Population (summer season)	0.000002	0.9%
U.S. Population (autumn season)	0.000002	0.9%
U.S. Population (winter season)	0.000002	0.9%
Northeast region	0.000002	0.9%
Midwest region	0.000002	0.9%
Southern region	0.000002	0.8%
Western region	0.000002	1.0%
Hispanics	0.000002	0.9%
Non-hispanic whites	0.000002	0.9%
Non-hispanic blacks	0.000002	0.8%
Non-hisp/non-white/non-black	0.000002	1.1%
All infants (< 1 year)	0.000003	1.7%
Nursing infants	0.000001	0.3%
Non-nursing infants	0.000004	2.2%
Children 1-6 yrs	0.000004	2.0%
Children 7-12 yrs	0.000002	1.2%

Females 13-19 (not preg or nursing)	0.000001	0.6%
Females 20+ (not preg or nursing)	0.000001	0.7%
Females 13-50 yrs	0.000001	0.7%
Females 13+ (preg/not nursing)	0.000001	0.6%
Females 13+ (nursing)	0.000002	1.0%
Males 13-19 yrs	0.000002	0.8%
Males 20+ yrs	0.000001	0.7%
Seniors 55+	0.000001	0.7%
Pacific Region	0.000002	1.0%
